ADOLESCENT HEALTH: TIME FOR A CHANGE

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1. "Juvenile Justice: A Critical Examination" by Barry Krisberg, Ph.D.
2. "Review of Programs for the Prevention and Treatment of Delinquency" by Edward P. Mulvey, Ph.D., Michael A. Arthur, M.A., and N. Dickon Reppucci, Ph.D.
3. "The Epidemiology of Minor Offending in Adolescence" by Scott Menard, Ph.D.

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November 1990

331

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Bottom of p. 11

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JUVENILE JUSTICE:

A CRITICAL EXAMINATION

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NCCD

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JUVENILE JUSTICE: A CRITICAL EXAMINATION

Background and Approach

The concept of a separate juvenile justice system evolved in the latter half of the 19th century, culminating in the Illinois Juvenile Court Law of 1899. But, as America enters the last decade of the 20th century the future of the juvenile justice system is very much in doubt. Some have argued that the juvenile court should be abolished (Wolfgang, 1979); others have urged abandonment of the traditional emphasis on rehabilitation (Feld, 1987). There are also those who contend that the juvenile court can reclaim its historic mission of "pursuing the best interests of the child" and become an important part of a total adolescent health care system (Krisberg, 1988).

This paper offers a critical examination of the theory and practice of juvenile justice. Current policies regarding juvenile offenders are evaluated in terms of whether juvenile justice interventions respond to the needs of youths, especially their developmental differences and their family and community contexts. Whenever possible this review is grounded in the latest rigorous research. However, as will become apparent, research on juvenile justice is highly under-developed.

Emergence and Transformation of Juvenile Justice

As early as 1825 the Society for the Prevention of Juvenile Delinquency advocated separation of juveniles from adult offenders. These Jacksonian era reformers created the New York House of Refuge, as a special prison for wayward youths emphasizing education, industry and moral training (Pickett, 1969). Within a few years, other houses of refuge were established in most major cities. These early juvenile correctional facilities were intended as preventive institutions that accepted children convicted of crimes, destitute youths and children of unfit parents. The first judicial reviews of the authority of the houses of refuge granted them virtually unrestrained powers using the legal doctrine of parens patriae. This concept views the state as the ultimate parent for children whose natural parents can not provide appropriate levels of supervision.

By the mid-nineteenth century, critics were already exposing scandals and abuses occurring within the new youth prisons. There was ample evidence of excessive use of solitary confinement, whipping and other severe forms of corporal punishment. Violence in the institutions was commonplace and one historian estimates that 40% of the children escaped from the institutions or their post-release placements (Mennel, 1973). Efforts to reform the houses of refuge resulted in states establishing juvenile facilities in lieu of the privately-run refuges.

In 1847, Massachusetts was the first state to open a "training school". Also, Massachusetts was the first to establish a state-run probation system in which representatives of the Board of Charities assumed responsibility for selected youths before they appeared in court.

Juvenile institutions were continually plagued with instances of riots and physical abuse of youths. Labor unions objected to the system of contracting out inmate labor to businessmen. Catholic groups complained that incarcerated youth were denied freedom to practice their religion (Mennel, 1973). Many states established special investigative commissions to inspect the training schools and develop alternative placements.

In Illinois, these forces culminated in the Juvenile Court Act of 1899 -- the first comprehensive American child welfare legislation. Child advocates, joined by powerful groups such as the Chicago Bar Association and the Chicago Women's Club decried the practice of housing children in the Cook County Jail (Platt, 1969). The new Illinois juvenile court was mandated to handle dependant and delinquent youths. Juveniles charged with truancy, running away or chronic disobedience also were handled by the new "children's court". The court's jurisdiction was made very broad and judges were given wide latitude to remove youths from their families or to supervise them in the community. Court procedures were designed to be informal, flexible and closed to public scrutiny. This operating mode was justified as necessary to protect children.

The concept of a distinct children's court soon spread throughout the nation. By 1925, all but two states had enacted specialized legal procedures for young people. Proponents believed that they had ushered in a new era of individualized and humane care of wayward youths. But, some legal authorities questioned the seemingly unrestrained powers of the court. The new juvenile courts were soon overwhelmed with children and families whose needs greatly outstripped available resources. The goal of individualized treatment was soon abandoned because of staggering caseloads allowing less than 10 minutes for hearings (Krisberg and Austin, 1978). Defenders of the court sought to harness the emerging social sciences to augment treatment services through clinics attached to the court providing comprehensive diagnostic and treatment services. However, chronically insufficient budgets and lack of real dispositional options frustrated the hopes of child advocates.

Despite its problems, the basic juvenile court model was largely unquestioned until the mid-1960s. The court began to confront many intractable issues, including the spread of adolescent drug abuse and the emergence of violent youth gangs. Court clients were increasingly minority children and their families, whose cultural backgrounds and experiences differed greatly from court staff.

Growing doubts about the juvenile court led to a series of major U.S. Supreme Court decisions that fundamentally changed juvenile court rules. The landmark decision in In re Gault 387

U.S.1 (1967) specified a detailed set of rights that must be accorded juveniles. The Gault decision focused on notification of charges, protection against self-incrimination, the right to confront witnesses and the right to have a written transcript of the proceedings. Many juvenile court officials opposed these new rights, warning that the humane and informal court process would be transformed into a junior criminal court (Lemert, 1972).

Also in the late 1960s, the Presidential Commission on Law Enforcement and the Administration of Justice (1967) proposed the expansion of programs to divert youths from the court system and to reduce the number of youngsters in detention centers and state training schools. In 1974, the Congress enacted, by an overwhelming majority, the Juvenile Justice and Delinquency Prevention Act (JJDPA) of 1974 proving federal funds to states agreeing to remove status offenders[1]/ from secure confinement and to separate children from adults in jails.[2]/

The traditional paradigm of juvenile justice was in disarray. The developing consensus emphasized diversion, protection of juveniles rights and expansion of community-based treatment services. Rather than being a helping agency, the court was viewed with measured distrust. Federal funding priorities favored alternatives to conventional justice system programs.

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[1]/ A status offender is a youth who commits an act that is only a law violation for a juvenile. The most frequent status offenses are truancy, curfew violations, running away and being beyond parental control.

[2]/ In 1980 the Congress amended the JJDPA to require the complete elimination of the practice of housing juveniles in jails.

Within a decade, however, liberal optimism that juvenile justice could be destructured began to wane. Some observers warned that juvenile rights were still honored mostly in the breach (Rubin, 1979); others warned that diversionary programs actually "widened the net" of social control -- drawing in youngsters whose misconduct previously did not result in state intervention (Austin and Krisberg, 1981; Cohen, 1979; Lerman, 1975; and Scull, 1977).

A very different group of reformers sought to reorient juvenile justice policies towards harsher penalties for violent and repetitive offenders. They asserted that liberal federal juvenile justice policies were "ideas who vogue has run ahead of solid knowledge" (National Advisory Committee for Juvenile Justice and Delinquency Prevention, 1984:8). The Reagan administration urged (1) vigorous prosecution of serious juvenile offenders, (2) a new focus on the plight of "missing" children, (3) mandatory and harsher sentencing laws, (4) programs to reduce school violence and (5) national crusades against drugs and pornography (Regnery, 1986).

Federal policy priorities were also mirrored in state legislatures. Since 1976, more than half the states have made it easier to prosecute juveniles as adults. States have removed certain serious crimes from juvenile court jurisdiction and introduced mandatory penalties in juvenile court. Federal and state courts also reflected a sterner attitude toward juvenile offenders.

In Schall v. Martin 467 U.S. 243 (1984) the Supreme Court upheld the constitutionality of preventive detention of juveniles for their own protection and to prevent pretrial crimes.

Attacks on the juvenile justice system from liberal and conservative quarters continue. Some would question whether the juvenile court serves a useful function (Feld, 1989). Most observers would agree that the court needs a revitalized mission to bolster its image and public support. Before evaluating the prospectives for change, a more detailed understanding of the components of the juvenile justice system is needed.

Structure and Operation of the Juvenile Justice System

Figure 1, developed by the National Center on Juvenile Justice, provides a general view of how the juvenile justice system operates (Office of Juvenile Justice and Delinquency Prevention, 1987). This model of case processing is generally descriptive of practices in various states. However, there exists extreme diversity among jurisdictions in the organization and delivery of juvenile justice services.

Police are the primary referral source to the juvenile court, accounting for approximately 75 percent of all case referrals. The balance of cases come to court via school authorities, social welfare agencies and parents. Virtually all criminal charges result from police referrals; other referral sources loom larger for cases involving truancy, running away, and chronic parental conflict.

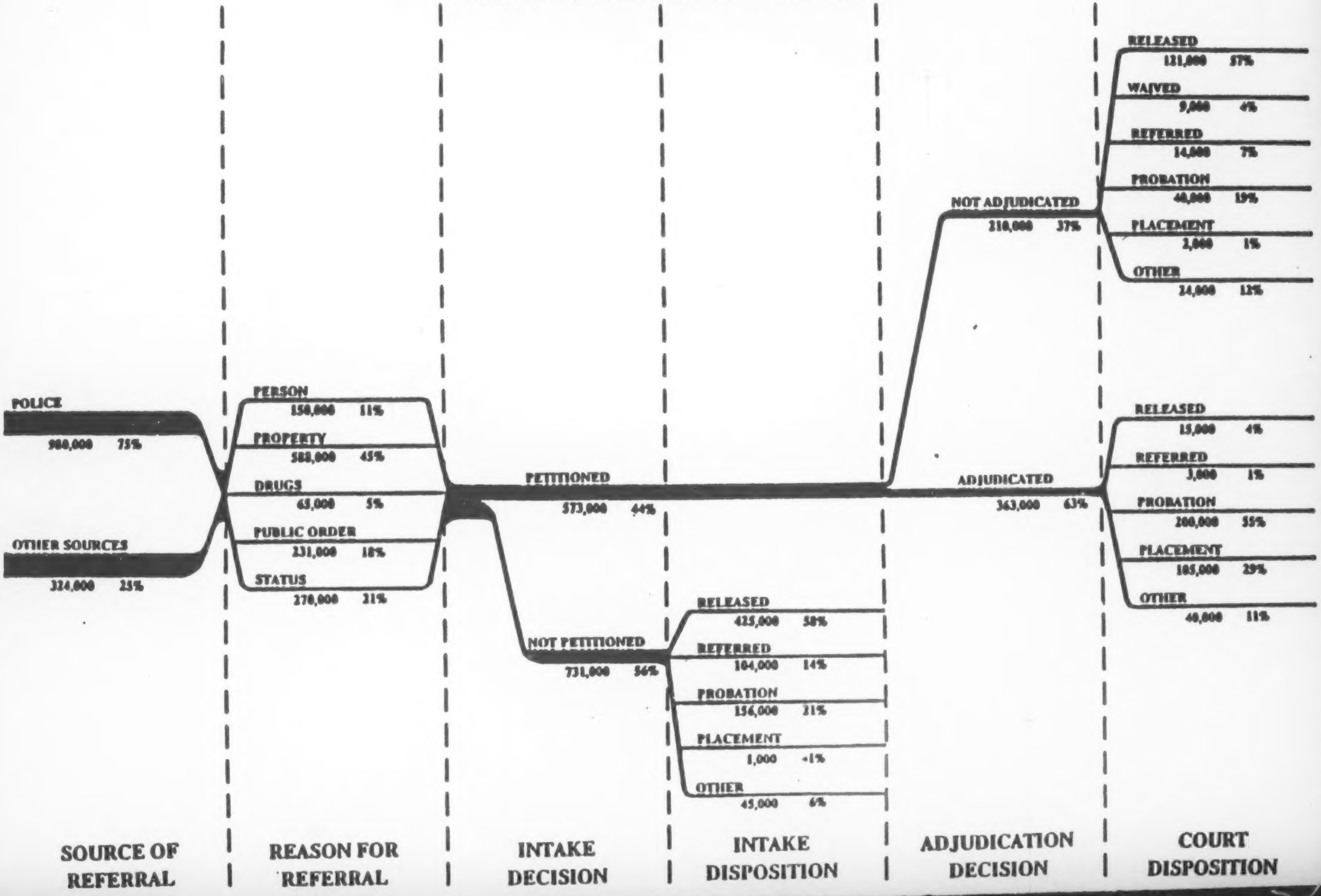
Police make initial and critical decisions about how adolescents will be handled. They may decide to handle cases informally through warnings and verbal reprimands. Law enforcement agencies often refer youths to non-judicial agencies such as youth service bureaus, community-based organizations or their guardians. Police also make key decisions on whether adolescents are temporarily detained in police lockups and adult jails, juvenile detention facilities or their homes.

Figure 1 shows the reasons for referral into the juvenile court system. Crimes against persons or property account for 56 percent of total referrals. Offenses against public order, including loitering, vagrancy, trespassing and public intoxication comprise 18 percent of court referrals. Status offenses such as truancy, running away, curfew violations and incorrigibility make up another 21 percent of the referral reasons. Traditionally, drug offenses have accounted for only 5 percent of the referrals, but there has been a very substantial increase in juvenile drug arrests in recent years (Snyder, 1989).

The police typically bring an adolescent to an intake unit operated by the juvenile court. Intake workers, who are often probation officers, examine the case in terms of legal sufficiency as well as the adolescent's needs for treatment services. The intake worker may file a delinquency petition -- meaning that the case will go further through the legal process. The case can also be dismissed or diverted to informal handling by a non-judicial

Figure 1

PROCESSING OF DELINQUENCY AND STATUS OFFENSE CASES BY JUVENILE COURTS IN 1984


POLICE
980,000 75%
OTHER SOURCES
324,000 25%
PERSON
150,000 11%
PROPERTY
588,000 45%
DRUGS
65,000 5%
PUBLIC ORDER
231,000 18%
STATUS
270,000 21%
PETITIONED
573,000 44%
NOT PETITIONED
731,000 56%
RELEASED
425,000 58%
REFERRED
104,000 14%
PROBATION
156,000 21%
PLACEMENT
1,000 <1%
OTHER
45,000 6%
NOT ADJUDICATED
210,000 37%
ADJUDICATED
363,000 63%
RELEASED
121,000 57%
WAIVED
9,000 4%
REFERRED
14,000 7%
PROBATION
40,000 19%
PLACEMENT
2,000 1%
OTHER
24,000 12%
RELEASED
15,000 4%
REFERRED
3,000 1%
PROBATION
200,000 55%
PLACEMENT
105,000 29%
OTHER
40,000 11%
SOURCE OF REFERRAL
REASON FOR REFERRAL
INTAKE DECISION
INTAKE DISPOSITION
ADJUDICATION DECISION
COURT DISPOSITION

agency. This decision is made customarily after consultation with the prosecutor. The majority of cases (56 percent) are not petitioned, with most of these cases being dismissed. Intake workers also employ a wide variety of informal referrals and placements to manage their cases. As noted earlier, the juvenile court has an strong ideology favoring informality and non-legalistic case dispositions.

Intake officers recommend to judges whether youths should be detained pending their adjudications. While youths can be briefly detained by law enforcement or probation staff, judicial review of detention decisions is required, usually within 48 hours. Nationally, more than two-thirds of all petitioned cases do not result in detention after judicial review.

The next stage of the juvenile justice process involves the juvenile court. Judges or their designated assistants (known as referees) decide on the legal merits of delinquency petitions. Of formally petitioned cases, 37 percent are either dismissed or handled without a juvenile court adjudication hearing. A small number of these cases (9,000 per year) receive a special hearing and are transferred or waived to the criminal court system. Waiver hearings are generally held in cases involving the most serious offenses.

For cases adjudicated in juvenile court, the most frequent disposition is probation (55 percent). Roughly 29 percent of adjudicated delinquents are placed in a broad variety of residential programs including public and private facilities. These placements can range from high security correctional facilities to wilderness programs, group homes or foster families. Another 16 percent of adjudicated cases are released, referred to social service agencies or given some other disposition such as fines, restitution or mandatory counselling services.

The composite picture of juvenile justice emerging from these data is of a very informal, diversionary process. Only 28 percent of total referrals result in a formal adjudication; 8 percent of all referrals end with an court-ordered placement.[3]/ The juvenile justice system includes many different types of public and private community agencies. The multiplicity of informal dispositions and the extremely localized decision-making presents a particular challenge to improving the treatment of delinquents (Krisberg et al., 1984).

The Legal Context of Juvenile Justice

A variety of state statutes establish the legal authority for the delivery of juvenile justice services. There is great variation in the behaviors proscribed by juvenile codes, the ages of youths covered and the purposes of the juvenile court. In essence there are at least 50 distinct and highly individualized juvenile justice systems in the United States.

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[3] -These data are collected from a non-probability of 34% of the nation's juvenile courts. While these courts serve jurisdictions in which more than half of the nation's youth population reside, the precision of any national estimates is unknown.

This diversity is particularly important in defining the age of jurisdiction. Figure 2 summarizes state laws governing when criminal courts can gain jurisdiction over adolescent offenders. Fifteen states specify no minimum age for transfers of juveniles to adult courts. The vast majority of states permit transfers for adolescents as young as 14 years old. Others statutes list specific offenses that result in automatic waivers of juveniles to criminal courts or grant prosecutors discretion to select the court of jurisdiction.

State juvenile justice systems also differ in terms of the scope of misconduct leading to court intervention. For example, Washington state excludes status offenses from court authority, whereas other states such as California limit the range of sanctions to be used with status offenders. Some jurisdictions handle delinquency, dependency and neglect within one court; others assign dependency and neglect cases to specialized courts.

States also differ as to the structure of the juvenile court. Utah has a statewide separate juvenile court; California's juvenile court is a special division of the Superior Court and New York has a Family Court. Some states have full-time juvenile court judges; whereas others rotate judges in and out of juvenile court assignments. Juvenile court judges vary dramatically in their legislatively mandated powers and the extent of their judicial training and experience (Rubin, 1979). This melange of state laws leads to enormous disparities in practice across state boundaries (Krisberg et al., 1984 and Snyder et al., 1989).

Is There A Societal Consensus on the Goals of Juvenile Justice

A review of juvenile codes and actual practices would lead one to conclude that a multiplicity of goals guides the juvenile justice system. The following sections from California's Welfare and Institutions code vividly illustrate this point:

> ... to provide for the protection and safety of the public and each minor under the jurisdiction of the juvenile court and to preserve and strengthen the minor's family ties whenever possible... Minors under the jurisdiction of the juvenile court ... shall receive care, treatment and guidance which is consistent with their best interest, which holds them accountable for their behavior, and which is appropriate for their circumstances. (Moosekian, 1989)

The California code goes on to list a broad range of correctional and sound objectives. However, in recent years it has become increasingly popular to urge harsher punishments for juvenile offenders (Rossum et al., 1987). Periodic violent acts, such as a brutal gang rape in New York's Central Park, tend to inflame passions and encourage those who would handle more adolescent offenders in criminal courts. It is often argued that the juvenile justice system is caught between the conflicting goals of public protection and protecting the best interests of children (ibid).

Several recent public opinion polls suggest that most Americans want juvenile justice agencies to pursue more effective treatment approaches rather than to increase their punitiveness. In 1982, NCCD, the Field Institute and the Hubert H. Humphrey Institute of Public Affairs commissioned a national public opinion poll conducted by the Opinion Research Corporation (ORC) (Haugen et al., 1982). The poll found that 87% of those surveyed believed that juvenile crime was rising at an alarming rate. Approximately 78% felt that the juvenile courts are too lenient on juveniles found guilty of serious crimes. Despite these responses reflecting public fear and concern, the poll also revealed that most Americans (73%) want a juvenile court system whose primary mission is treatment and rehabilitation rather then punishment. Whereas a majority (57%) felt that incarcerating young offenders served as a deterrent to other adolescents, a much larger group (89%) believed that increasing employment opportunities could prevent a lot of serious crimes.

The public showed a strong preference for prevention services. Most of those polled (61%) said that status offenders should not be handled by the court system, but by other community agencies. A similar proportion of respondents felt that not enough money and resources are being spent to prevent youth crimes.

More recently NCCD and the Field Institute surveyed over 1,000 Californians on their attitudes towards youth crime (Steinhart, 1988). The results supported and, in some instances, amplified the results of the early national poll. The California data are especially significant because the state has the toughest juvenile sentencing policies in the nation (DeMuro et al., 1988).

Similar to the national ORC survey, Californians are convinced that juvenile crime is rapidly increasing and that juvenile courts are too lenient with serious offenders. However, Californians strongly endorse rehabilitation for juveniles (71%) and subscribe to a view of the juvenile court as primarily a treatment agency (68%). By a wide margin (84%), Californians reject the practice of housing juveniles with adult offenders. They favor shorter sentences for youth (62%) and they prefer treatment programs to policies that emphasizing long periods of confinement (82%).

On virtually every question, Californians register overwhelming support for treatment, education and employment strategies for delinquents. A remarkable 92% believe that incarcerated youths should have access to job training, educational and counselling before they reenter the community. Their responses represent a very strong endorsement of the traditional mission of the juvenile justice. On several dimensions, the public rejects the simplistic notion that incapacitating young offenders is an effective crime control strategy. The survey respondents also endorse spending more money on prevention and treatment programs.

These poll results are especially significant because the survey was conducted during the height of a presidential campaign which made crime a major issue. There was also great public awareness of gang violence and escalating drug use in the Los Angeles area. However, Southern Californians responded in comparable ways to citizens in less crime-ridden parts of the state. Indeed, what is remarkable in both the ORC national poll and the California survey is the similarity in responses among various demographic subgroups. Survey respondents regardless of party affiliation, income level, education, gender or ethnicity hold very similar views of juvenile justice matters.[4] This is what political scientists call consensus.

Of course, public opinion is not identical to political rhetoric or governmental practice. There is hardly agreement on goals among those working in the juvenile justice system. However, these poll data indicate strong public support for juvenile justice reforms that advance treatment and rehabilitation objectives.

The Need for a Developmental Perspective

Almost by definition the juvenile justice system should be guided by a developmental perspective. The central premise of the juvenile court is that children should be treated differently from adults. Adolescents are not viewed simply as small adults. The court's jurisprudence assumes that adolescents possess somewhat less responsibility for their actions than adults. The juvenile court seeks to handle many cases on a less restrictive, informal basis, giving youngsters opportunities to mature out of bad behaviors. Criminologist Franklin Zimring (1987) analogizes the juvenile court to a "learner's permit". Society expects young people to make mistakes and wants them to learn from these indiscretions without exacting full adult court penalties.

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[4] / Another California poll about public attitudes towards adult offenders reported a much smaller group supporting treatment and rehabilitation (Field Institute, 1981).

In general, the juvenile justice system incorporates an informal sense of "development". Younger offenders are more likely to be diverted to social service agencies by police and courts. Younger adolescents (usually below age 13) are less likely to be detained or placed out of their homes than their older counterparts (Snyder et al., 1989). A significant exception to this general practice occurs with status offenders. Here practices are reversed. Younger status offenders are slightly more likely to be held or placed out of their homes than older youths. This seems to reflect the court's child protection philosophy and its desire to disengage from family disputes as adolescents near the age of legal majority.

Another way in which the current juvenile justice system employs a developmental perspective is in the removal of children from adult jails. The federal JJDPA of 1974 required states to separate juveniles from adults in secure facilities as a condition for receiving grant funds (Schwartz, ed., 1988). In 1980, the Congress strengthened its policy direction, mandating the complete removal of juveniles from adult facilities. Recently, federal courts have interpreted the federal jail removal mandate as creating a private cause of action (under civil rights laws) for juveniles held in adult jails (Soler, 1988). Most states have made substantial progress towards the goal of eliminating the jailing of children, however as many as 20 states have not fully met the federal mandates (Steinhart, 1988). As with other aspects of juvenile justice, jail removal policies are highly diverse because states all possess different age boundaries defining who is a juvenile.

The juvenile court's developmental philosophy is often severely tested by adolescents committing violent crimes. Neither political nor judicial agreement exists on exactly where to draw the appropriate boundaries between adult responsibility versus the mitigated accountability of young people. These conflicts and contradictions were vividly illustrated in recent U.S. Supreme Court cases involving capital punishment for juveniles.

It should be noted that the U.S. is virtually alone among industrialized nations in sentencing juveniles to death. The only other large nation that has a death penalty for children is Iran (Streib, 1988).

In **Eddings v. Oklahoma** 455 U.S. 104 (1982) the Court held that age should definitely be considered a mitigating factor in deciding whether the death penalty should apply. The Court noted that adolescents are more impulsive, possess less self-discipline and are less able to consider the long range implications of their actions. The **Eddings** case was soon followed by other cases attempting to establish the age below which it was unconstitutional to execute juveniles. In **Thompson v Oklahoma** 108 U.S. 2687 (1988) the Court voided statutes in 15 states that specified no minimum age for applying capital punishment. The Court in Thompson suggested that age 15 was certainly a minimum age for executions. But, in Wilkins v. Missouri 57 U.S. Law Weekly 4973 (1989) the Supreme Court refused to set a higher standard, despite briefs filed by the American Bar Association, the National Council on Crime and Delinquency, the Children's Defense Fund, among others, urging that the age 18 should be the constitutional minimum age.

The issue of transferring adolescents to adult courts also illustrates current difficulties of implementing a developmental perspective in the juvenile justice system. As noted earlier, the states have widely divergent definitions of the age boundary separating juveniles from adults. Whereas most states give the juvenile court original jurisdiction for youngsters through age 17, New York, Connecticut and North Carolina set that limit as low as age 14. Further, for selected crimes there are both automatic and discretionary procedures for transferring juveniles to criminal courts (Hamparian et al., 1982). States also differ in how they handle adolescent offenders who are "between two worlds" in the legal process. For example, an adolescent transferred to adult court is held in a juvenile facility in Illinois, in California they would be housed in an adult jail and in New York the young person would be kept in a special adolescent facility operated by the Department of Corrections. Once sentenced as an adult, a youth under age 18 in Illinois is housed separately from adults; in Texas they would be mixed with adult offenders.

Not surprisingly, these diverse procedures lead to a wide disparity in outcomes (Fagan et al, 1987). Research suggests that transfer decisions are sometimes based on arbitrary and capricious criteria (Eigen, 1981 and Bortner, 1986). Moreover, the question of transfers remains an ongoing "hot button" issue in legislative forums, particularly after notorious crimes committed by very young persons. After a particularly brutal and well-publicized juvenile crime in New York City, a New Hampshire congressman introduced a bill that would require all states receiving federal funds to automatically transfer violent offenders over the age of 15 to adult courts. Ironically, this bill is patterned after present New York law which obviously did not deter the perpetrators of the notorious crime.

The transfer issue illustrates the obvious lack of consensus among juvenile justice professionals about incorporating a consistent developmental perspective in their decision-making. Rather than clinical judgments or diagnostic assessments, developmental questions in juvenile justice are largely determined by lawyers and are governed by adversarial procedures.

In sum, the juvenile justice system does not operate with a coherent and consistent developmental perspective. Different handling of adolescents based on their age or maturity levels is determined by legislative actions, adversarial processes and informal and localized court cultures. Juvenile justice practitioners are largely unaware of research on adolescent development. Moreover, the juvenile justice system does not possess the trained personnel to authentically respond to the developmental diversity of its clients. For example, a recent study suggests that adolescents under age 15 do not comprehend the meaning of their basic rights in juvenile court (Grisso , 1980). The author suggests that very young juveniles should not be allowed to voluntarily waive these rights.

What are the Attributes of Adolescents Handled By the Juvenile Justice System?

Describing the characteristics of adolescents entering the juvenile justice system is a very difficult task. Data are collected by a range of independent agencies and these statistical data collection efforts do not use common definitions. One cannot follow individual cases as they flow through the juvenile justice system. Further, there are many informal case dispositions that limit the generalizability of data derived from adolescents who are formally handled by the court. For example, there is no uniform definition of what constitutes an arrest. In some locales, virtually all young people stopped by the police are arrested; in other places only half the youths apprehended by the police end up with a formal arrest record (Wilson, 1968 and Wolfgang et al., 1972).

According to the Federal Bureau of Investigation there were approximately 1.7 million persons under age 18 arrested in 1987. (Uniform Crime Reports, 1988). The FBI reports minimal data about the age, gender, race and offenses of these youths. However, the reliability and completeness of these data are extremely uneven.

A richer source of data on adolescents in the juvenile justice system is the National Juvenile Court Data Archives (NJCDA) (Snyder et al., 1989). These data are from a non-probability sample of 1,133 courts with jurisdiction over roughly 49% of the nation's at-risk youth population. The NJCDA employs a complex weighting procedure to generate national estimates based on data from the reporting jurisdictions. Because the data are not based on a probability sample, the sampling error or confidence intervals around the statistics presented are unknown.[5]/ The data refer only to adolescents formally processed by juvenile courts in 1985 for either delinquency charges or status offenses.

Characteristics of Delinquency Cases

Of the estimated 534,000 delinquency cases handled by courts in 1985, property crimes accounted for 55% of the total. Another 21% were charged with offenses such as disorderly conduct, public drunkenness and contempt of court.[6]/ Violent crimes accounted for approximately 18% of all court cases. Drug offenses accounted for

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[5]/ The Office of Juvenile Justice and Delinquency Prevention is presently commencing a major national statistics project to improve the quantity and quality of information on youths at various stages in the juvenile justice process.

[6]/ Contempt orders may include youths who run away from court-ordered placements.

6% of the juvenile court's cases -- but this represents the fastest growing category among all juvenile crimes.

Slightly more than half (53%) of court-processed adolescents were under the age of 16 at the time of referral. Figure 3 presents age-specific rates for various delinquency offenses. Delinquency rates rise sharply with age.

Males account for 85% of all delinquency cases. Males and females are brought to court for similar types of offenses. White youths comprised 67% of those brought into court. However when one examines the rate of court processing per 1000 youths at risk, minority young people have a delinquency case rate twice that of their white counterparts (36 per 1000 and 17 per 1000, respectively).[7]/ The differences are particularly dramatic for violent offenses -- minority youths come to court charged with violent crimes at a rate four times that of white youngsters. More will be said later about the disproportionate representation of minorities in the juvenile justice system.

Characteristics of Status Offenders

Besides those youths referred to court for delinquency, another 88,000 status offense cases were handled by the nation's juvenile courts in 1985. Approximately equal numbers of adolescents were referred for truancy, running away, ungovernability and liquor

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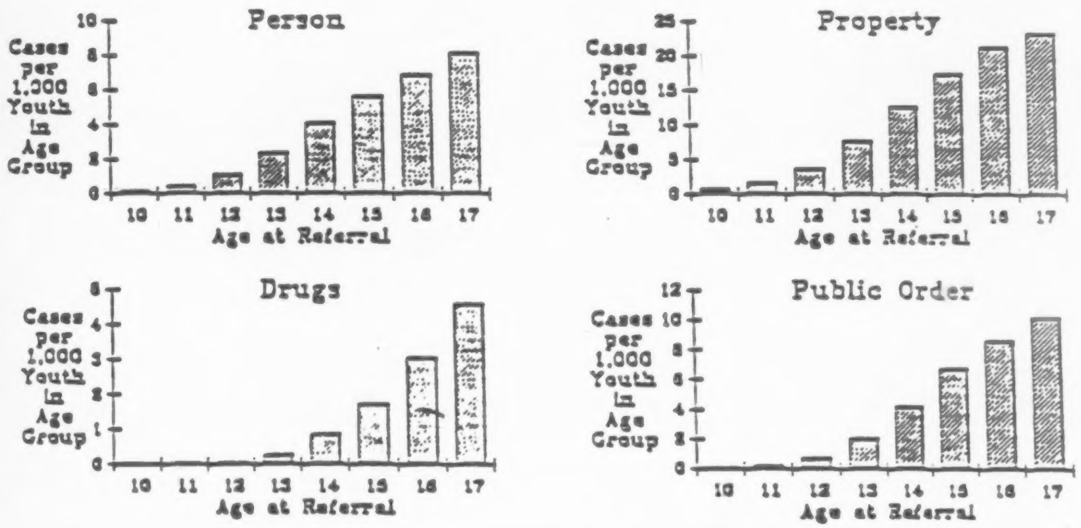
[7]/ These figures categorize most Hispanic youths as white. Since Hispanic youths have high rates of delinquency, the white versus non-white differences are even more striking.

Figure 3
Delinquency Case Rates
Within Age Groups and Offense Categories, 1985



Source: Snyder et al., 1989:19.

law violations. Status offenses peak at age 15 and decrease for older adolescents.[8]

Males constituted 57% of status offense cases. Males are especially likely to be referred to court for liquor law violations. Females are more likely to be charged with running away. Females are much more often detained and removed from their homes than male status offenders.

Whites comprised 83% of the status offense cases. In contrast to the disproportionate number of minorities charged with delinquency, whites had a higher rate of court involvement for status offenses (3.4 per 1000 and 2.8 per 1000, respectively).

Family and Economic Backgrounds

While there are no national-level data on the family and economic statuses of delinquent youths, countless state and local studies have reported that most court-processed youths come from low income, female-headed households (Krisberg et al., 1988; Snyder et al., 1989; Wolfgang et al., 1972).

In 1987, the Bureau of Justice Statistics conducted in-depth interviews with over 2600 youths residing in state juvenile correctional facilities. This survey provides the most detailed picture ever assembled on serious juvenile offenders (Beck et al., 1988).

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[8] This age-specific pattern may reflect juvenile justice practices more than youth behavior. Juvenile justice officials often use status offense labels to deal with the minor delinquency of younger adolescents. Similar misconduct by older youths may be treated as delinquent violations. Also, the juvenile justice system is less willing to intercede in family or school conflicts as youths approach the age when they can legally leave school or their families.

The survey revealed a profile of incarcerated adolescents who did not live with their parents while growing up (70%). More than half (52%) had at least one family member who was incarcerated. The vast majority (80%) admitted using illegal drugs; 40% reported drug use before the age of 12. Nearly half (48%) said they were under the influence of drugs or alcohol while committing their most recent offense.

Adolescents in the Juvenile Justice System with Special Needs

Data on the special needs of juvenile justice clients are extremely limited. While there are several studies analyzing the psychological and learning problems of selected samples of court adjudicated adolescents, few systematic state-level or national studies have been conducted.

Concern over handicapping conditions among adolescents has intensified since the passage of the Education for All Handicapped Children Act (P.L.94-142) of 1975. This law made clear that incarcerated adolescents were entitled to a "free and appropriate education" (Hockenberry, 1980). Simultaneously, there has been extensive litigation on behalf of incarcerated young people asserting their rights to treatment and requirements for special educational programming (Warboys and Shauffer, 1986).

Murphy (1986) provides the best overall summary of existing data on the prevalence of handicapping conditions among delinquents. These estimates come from a variety of samples (primarily of incarcerated youths), employ differing definitions of the handicapping conditions and often rely on reports by facility administrators rather than actual clinical measurements. Still, the existing evidence suggests that delinquents have much higher rates of handicapping conditions than the general adolescent population. For example, two federal studies estimate that between 6-14% of all school age children possess some handicapping condition (Comptroller General, 1981; Office of Special Education Programs as reported by Murphy, 1986). By contrast, two national surveys of incarcerated youths found that between 28-42% of confined delinquents were classified as handicapped (Murphy, 1986:9).

The previously mentioned studies of school age youths reported that between 1-2% suffered from emotional disturbances. Several studies of delinquent populations report prevalence rates of emotional disturbance at 16-50% (Murphy, 1986:10). Prevalence rates of mental retardation among delinquent populations are at least five times those of the general adolescent population (Murphy, 1986:11).

Other researchers have reported extraordinarily high rates of learning disabilities among delinquent youths (Murphy, 1986:12). Young et al.,(1983) found that 8% of the incarcerated juvenile population had physical handicaps and 9% suffered from chronic illnesses: prevalence rates at least fifty times those of average school-age youths. Other health researchers have reported very high rates of head injuries (Snavely reported in Murphy, 1986) as well as speech and vision impairments (Magrab and Williams, 1982 and Morgan, 1979).

These studies show that the incarcerated adolescent population includes large proportions of youngsters with severe medical, psychological and developmental problems. There are virtually no data on the prevalence of these special needs among the adolescents placed on probation or managed informally by the juvenile justice system. However, it is certain that very few juvenile justice agencies are equipped to respond to these special needs. This situation demands urgent attention on humanitarian grounds alone. Moreover, one can reasonable predict more extensive litigation efforts to provide statutorily mandated health and special education services to delinquent youths (Shauffer et al., 1987).

Important Trends in Adolescent Crime and Juvenile Justice

The most obvious first question is: what are the trends in the delinquent behavior of American adolescents? Unfortunately, this legitimate policy concern cannot be answered. Only crimes resulting in arrests provide data on the age of the perpetrator. This represents a very small proportion of all offenses; about one-third of all crimes are even reported to the police and arrests are made in the cases of approximately 20-25% of reported crimes. Thus, trend data based on juvenile arrests reflect a tiny fraction of overall delinquent behavior (Bureau of Justice Statistics, 1987).

Another potential source of information on delinquency is national probability samples of adolescents such as the University of Colorado's National Youth Survey (NYS) (Elliott et al., 1983) and the University of Michigan's Monitoring the Future Project (MFP) (Bachman et al., 1985). The NYS is a longitudinal survey of a national sample of adolescents begun in 1976. Data are derived from the self-reports of these young people. The MFP also relies on self-report data, however, the annual sample is drawn from the universe of high school seniors. The NYS is particularly valuable for longitudinal analyses and allows estimation of statistics for all adolescents. The MFP misses those who have dropped out of school, but it generates more extensive annual trend data for those adolescents sampled.

According to the NYS, in 1976 approximately 29% of males and 11% of females aged 11-17 years reported committing an index offense[9]/. The NYS data indicate that birth cohorts born after 1960 have lower delinquency prevalence rates, but those youths who report committing serious offenses also report higher incidence rates (more crimes per offender). Thus, a smaller proportion of adolescents are getting involved in serious delinquency, but this subgroup is committing more crimes. At an aggregate level, these two trends suggest a relatively stable amount of delinquency in the society. The MFP reports similar findings. Neither the NYS nor the MFP provide explanations for these trends.

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[9]/ An index offense includes homicide, rape, robbery, aggravated assault, burglary, larceny, auto theft and arson.

Juvenile arrest trends portray a very different picture of delinquency. Between 1978-1987 the number of juveniles arrested for index crimes declined by 13%. By contrast, during this same period adult arrests for serious crimes rose by 37%. The overall decline in juvenile arrests was largely a function of fewer male arrests (down 20%); female arrests during this decade actually increased by 30% (FBI, 1988:169). While some of this drop in arrests can be explained by a decline in the absolute numbers of adolescents in the society, this demographic fact cannot account for the substantial rise in female arrests.[10]/

At the same time that fewer juveniles were being arrested, the manner by which police handled these cases changed. In the early 1970s about half the juveniles taken into custody were referred to juvenile court; the others were handled informally within police agencies or were diverted to social service agencies. By 1987, the proportion of adolescents sent to court increased to 62%. There were corresponding declines in the use of diversionary methods. Moreover, the proportion of those arrested referred to adult courts rose from 1% to 5% between 1971-1987 (Krisberg et al., 1986; FBI,

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[10]/ Between 1978-1987 arrests of adult females rose by 24%.

1988:225).

Juvenile court statistics reveal parallel trends of (1) handling a larger share of referrals by formal delinquency petitions,(2) reduced use of probation and increased out-of-home placements and (3) a larger proportion of cases transferred to adult courts. The pattern is unmistakable. Despite declining numbers of arrests, the juvenile justice system became more formal, more restrictive and more oriented towards punitive sanctions (Krisberg et al., 1986).

Not surprisingly, these juvenile justice trends have contributed to historic high levels of incarcerated adolescents. Table 1 shows that juvenile confinement rates have increased by 43% between 1977-87 (Krisberg et al., 1989). This rise of children in custody rates occurred in both public and private facilities. Privately operated juvenile corrections facilities experienced the largest growth in admissions (88%), whereas the rising population in public facilities was more a product of increased length of stay rather than admissions. Other data suggest that the number of juveniles in jails has remained constant and the number of persons under 18 residing in prisons has increased (Krisberg et al., 1989).

Expenditures for juvenile corrections have barely kept pace with inflation. Also, there have been minimal capital investments in juvenile corrections because government attention has been riveted to the massive problems of prison and jail crowding. Consequently, more and more juvenile corrections facilities are subgroup is committing more crimes. At an aggregate level, these two trends suggest a relatively stable amount of delinquency in the society. The MFP reports similar findings. Neither the NYS nor the MFP provide explanations for these trends.

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Table 1

Rates per 100,000 of Juveniles in Custody 1977-1987*

	1977	1979	1983	1985	1987	% Change 77-88
U.S. Total	247	251	290	313	353	+43%
Public	149	151	176	185	208	+40%
Private	98	100	114	128	145	+48%

Source: Children in Custody, 1977-1987
U.S. Bureau of Census, Population Estimates

* Rates are computed for juveniles age 10 to the upper age of juvenile court jurisdiction in each state.

chronically crowded and physical plants are deteriorating. The crush of numbers has strained professional and staff resources. This has resulted in many lawsuits challenging the constitutionality of conditions of confinement in juvenile facilities (Krisberg and Breed, 1986). The experience of confinement has become harsher for the growing number of confined adolescents.

Over-representation of Minority Adolescents in Juvenile Justice

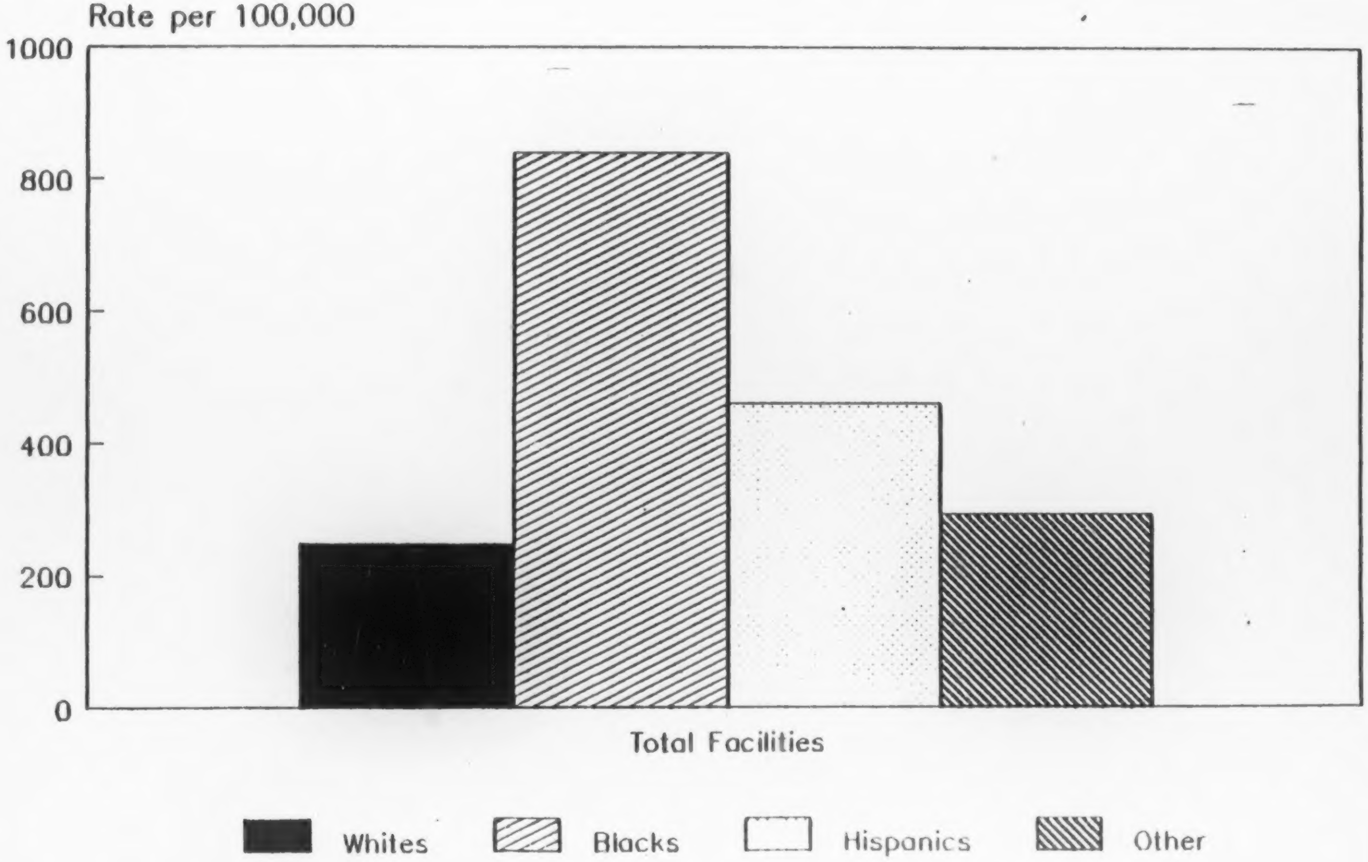
Minority adolescents comprise a disproportionate share of juvenile justice clients at every stage in the process. Figure 4 shows juvenile custody rates by race. Black youngsters are confined at a rate four times that of whites; the Hispanic youth incarceration rate is more than double the white rate. The over-representation of minority adolescents in correctional facilities is even more pronounced for males. Further, minority adolescents are far more likely to be sent to public versus private correctional facilities. Black and Hispanic adolescents are more likely housed in more secure correctional settings (Krisberg et al., 1987).

Minorities have arrest rates for index crimes nearly three times those of whites. For violent offenses these arrest differentials are even larger (Uniform Crime Reporting Program, 1988). As noted earlier in this paper, juvenile court statistics reveal that minority adolescents are processed through court at a rate two times that of white youngsters and this finding is

FIGURE 4

Juveniles In Custody by Race

Rates per 100,000 in all Facilities



Source: Children in Custody, 1987
U.S. Bureau of Census, Population Estimates

particularly true for crimes against persons. Minority youths are more likely to be detained awaiting court hearings and are more likely to be placed out of their homes after adjudication (Snyder et al., 1989).

These compelling data demand detailed policy analysis. While there has been extensive research on this question, the accumulated research data are contradictory and incomplete (Krisberg et al., 1987). Both self-report and police data indicate that minorities engage in delinquent behavior more frequently than white adolescents, however these differences in behavior not large enough to completely account for the much higher presence of minorities in the juvenile justice system. For example Huizinga and Elliott (1987) report that for adolescents reporting equal levels of serious delinquency, Black youngsters are twice as likely to have a recorded arrest. Huizinga and Elliott find that neither higher prevalence nor incidence rates account for the over-representation of Black adolescents in juvenile correctional facilities. Krisberg et al. (1987) used FBI data to show that post-arrest processes increase the probability of incarceration for Black, Hispanic and Native American adolescents. Fagan and his colleagues (1987) found substantially different outcomes by race at all levels of the juvenile justice process in one western state.

Researchers have not been able to precisely estimate the impact of behavior versus system processing in producing the disproportionate minority presence in the juvenile justice system.

It is likely that both factors are operating to some extent. Moreover, it is probable that social class, family and community variables also impact the relationship between race and justice system involvement. It is not simply a matter of prejudiced justice system workers, although this is a problem in certain locales. Far more subtle and intractable forces are at work including real and perceived differences about (1) the existence of community-based alternatives for inner-city adolescents, (2) the strength of family supervision and (3) the extent of gang activity and drug trafficking in minority communities. All of these factors might lead court officials to place adolescents out of their homes for reasons of child protection rather than for punitive purposes.

The imbalance of minorities in the juvenile justice system has led OJJDP to require that recipients of JJDPA funding examine the problem within their jurisdictions. Many national organizations such as the American Correctional Association, the National Council of Family and Juvenile Court Judges and the National Association of State Juvenile Justice Advisory Groups are presently completing studies on this issue. In the next few years the research data base should vastly improve and there will be several demonstration projects aimed at reducing the number of minority youths who spend their adolescence in confinement.

The Ambivalent Response to Female Offenders

In the late 1940s distinguished criminologist Paul Tappan (1947) raised serious questions about the disparate treatment of young women in New York City's juvenile court. Some researchers have reported finding that young female delinquents receive less severe dispositions than males (Snyder et al., 1989; Figueira-McDonough, 1985; Teilman and Landry, 1981). Others have found that female status offenders receive harsher punishment than either male status offenders or delinquent offenders of either gender (Chesney-Lind, 1978: Krohn et al., 1983; Shelden, 1981). Young females are often referred to juvenile court for minor offenses. The court has historically played a significant role in regulating the sexual behavior of female adolescents, but not males (Chesney-Lind, 1988, Figueira-McDonough, 1987 and Sarri, 1986).

Female status offenders are much more likely to be detained or placed in out-of-home settings than males (Schwartz et al., 1989). In 1987, there were 19,035 females and 72,611 males housed in public and private juvenile correctional facilities. Table 2 presents the offenses for which these youths were confined. It is striking that the vast majority (62%) of females are not incarcerated for delinquent behavior. The most frequent reasons for female custody are status offenses and non-offenses (abuse, dependency and neglect). Only 6% of females as compared to 20% of males are confined because of crimes against persons (Krisberg et al., 1989). Females are twice as likely as males to be in correctional facilities as result of voluntary commitments --

Table 2

Juveniles in Custody in Public and Private Juvenile Facilities by Reasons for Commitment and Gender *

	Males	Females
	(N=72,611)	(N=19,035)
Delinquent Acts	77%	38%
Crimes Against Persons	20%	6%
Crimes Against Property	37%	15%
Alcohol Offenses	1%	1%
Drug Related Offenses	6%	3%
Public Order Offenses	3%	4%
Probation/Parole Violations	5%	6%
Other	5%	4%
Status Offenses	8%	24%
Non Offenders	9%	22%
Voluntary Commitments	6%	15%

Source: Krisberg et al., 1989:35.

* Percentages may not add to 100% due to rounding.

usually at the request of parents or guardians.

Because of their relatively small numbers in male-dominated corrections systems, females often do not receive the same range of educational, counseling and vocational services. Moreover, most treatment approaches are derived from theories and empirical studies based on delinquent males. There is scant awareness among court personnel of the special etiology of female delinquency. For instance, research is now showing that female delinquents have suffered disproportionately from sexual abuse in their growing up experiences. Often young women are running away from abusive homes and their subsequent delinquent behavior is closely tied to their efforts to escape further abuse at home or in institutions (Chesney-Lind, 1989; Peacock, 1981).

One consequence of federal and state efforts to remove status offenders from secure facilities is a significant reduction of young women in detention centers and state training schools (Krisberg et al., 1986). From 1974-1979 the number of females in public juvenile facilities declined by 40%. However, during 1979-1987 the number of females in private juvenile facilities increased by 19%. As noted previously, most of these young women are confined for non-delinquent behavior (Krisberg et al., 1989).

The Effectiveness of Juvenile Justice Interventions

The continuing ideological challenges to the juvenile court from critics of both liberal and conservative persuasions has reawakened interest in measuring the impact of juvenile justice interventions. Severe fiscal pressures on local government have generated demands that the court produce "results" commensurate with public investments. However, there is no clear agreement on exactly what outcomes are to measured, nor about the most appropriate measurement techniques.

Research on juvenile justice has centered on (1) descriptions of court processing, (2) studies of decision-making and (3) evaluations of special programs. There are few studies of the major and predominant sanctions employed by juvenile justice agencies such as probation or commitments to state juvenile corrections facilities. Indeed, very few juvenile justice agencies routinely collect any data at all on outcomes. If at all, agencies collect data on how many youths complete GED degrees, how many hours of community service are performed or how much restitution is paid to victims. There are very limited data on recidivism or about how many youths become adult criminals. Almost nothing is known about whether juvenile justice clients are reunited with their families or obtain jobs.

Despite the significant public attention paid to recidivism rates, there exists no standardized measure of this critical outcome variable. Studies of juvenile corrections efforts have employed several different indicators to gauge subsequent criminality. The most widely used recidivism measures include (1) the proportion of youths who are crime-free during a specified period, (2) the incidence or frequency of re-offending before and after court intervention and (3) the severity of crimes committed before and after court sanctioning. More recently, some researchers (Woolredge, 1988) have proposed examining waiting time until the next offense as another measure of recidivism.

All of these indices are flawed because they depend upon official records of delinquent behavior -- i.e. getting re-processed by the juvenile justice system and not the actual behavior of the adolescent. Thus, recidivism rates may be more reflective of agency policy and practices than of actual misconduct. For instance, several corrections systems now report higher failure rates since the implementation on random drug testing of parolees. Before the new policies, these violations of supervision rules would not even be detected.

A plausible alternative recidivism measure might be to employ self-report surveys. However, the validity of self report data may fluctuate widely for offenders under the immediate jurisdiction of the justice system. The limitations of all existing recidivism indices suggest using multiple measurements, although few studies have employed this method (Maltz, 1984).

Juvenile Corrections System-Level Outcome Data

Recently, NCCD completed a detailed study of recidivism among youths committed to the Massachusetts Department of Youth Services (DYS).

Massachusetts places only about 15% of youths committed to the Department of Youth Services (DYS) in locked facilities; 85% of the youngsters are managed in small group homes, foster care placements, day treatment programs and intensive supervision programs. The small scale of the programs enables staff to respond to youth needs in highly individualized ways -- a major part of the historic vision of juvenile justice. We undertook this study because Massachusetts has been viewed as an enlightened model for juvenile corrections. The study was primarily intended to described the characteristics of DYS youths, the nature and extent of correctional interventions and the impact of these programs on public safety. To provide a context for interpreting the Massachusetts recidivism data, similar information was collected from several other state juvenile corrections agencies.

As noted earlier, interpreting recidivism statistics presents formidable analytic problems due to variations in clients, juvenile justice practices and official crime reporting standards. Nonetheless, NCCD reviewed data from eight separate statewide studies of juvenile corrections systems. Literature reviews were performed to identify reasonably current recidivism data. Studies identified were then carefully reviewed to determine the validity of the research methods used. In addition, a number of states provided unpublished data on recidivism.

Most important, we found that recidivism information is not routinely collected in most jurisdictions. Other states employ a range of recidivism measures that are not comparable to any other states. Very few studies report on multiple measures of recidivism or other measures of social adjustment. Figures 5-7 summarize the data based on 12-month follow-ups on re-arrests and reconviction, and 36-month follow-ups for reincarceration from Massachusetts, Pennsylvania, Utah, Florida, Texas, Illinois, Wisconsin and California (Krisberg et al., 1989). In general, these data cover serious and chronic juvenile offenders. The rates reported here are higher than those reported for adolescents charged with lesser offenses and placed on probation or handled informally by the court (Wolfgang et al., 1972; Snyder et al., 1988).

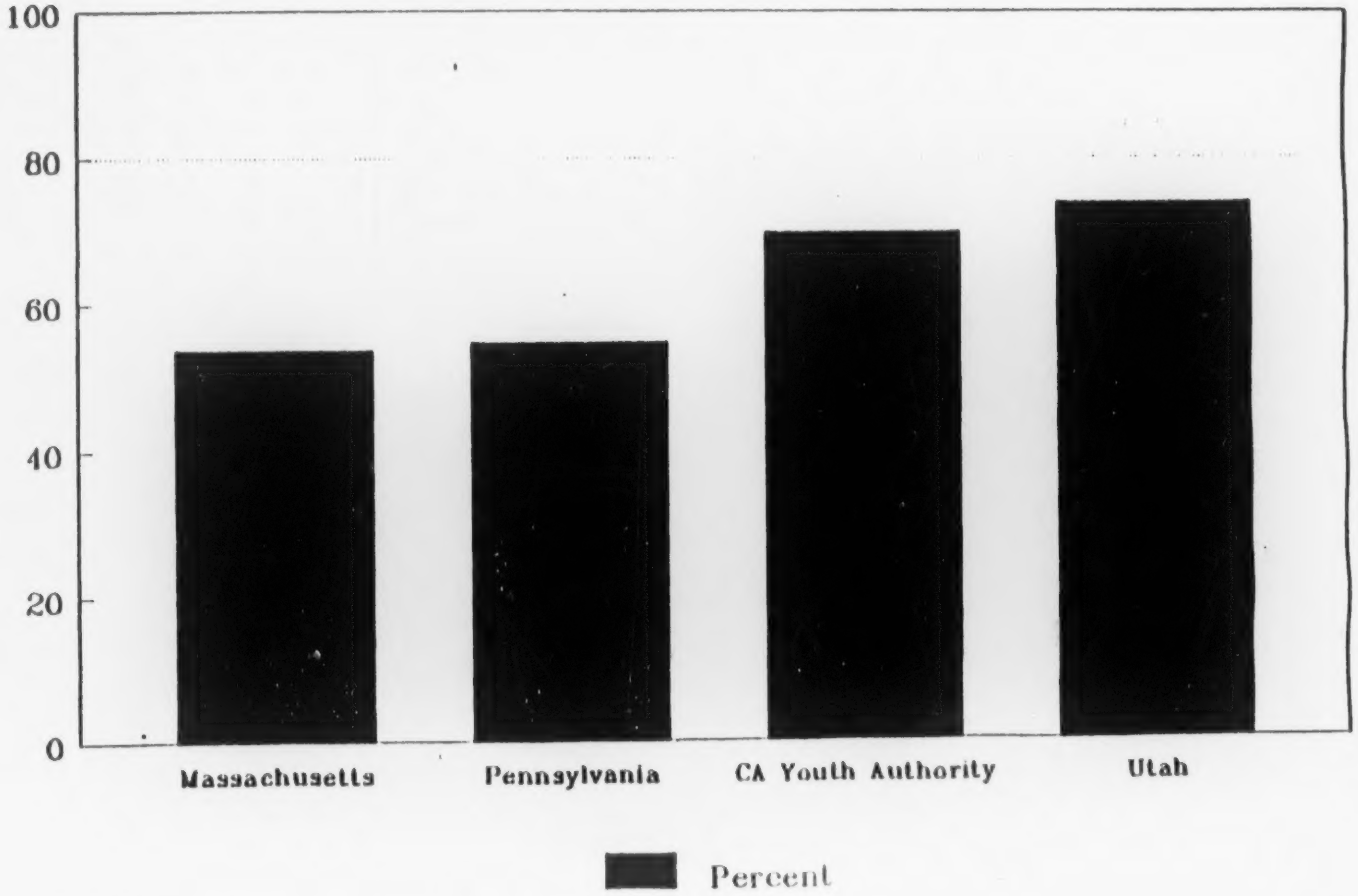
Rates of re-arrest ranged from roughly 50 percent in Massachusetts and Pennsylvania to over 70% in California and Utah. Data on the proportion of youths reconvicted within twelve months reveal a narrower band of variation. Whereas Utah seemingly possessed the highest recidivism based on re-arrest data, the state's reconviction rate is much closer to that of the lowest jurisdiction. This means that many of the Utah re-arrests did not result in sustained delinquency cases.

The data on reincarceration rates show wide variation from 25% to over 60%. However, these data are highly dependent on local sentencing policies and may not accurately reflect the levels of criminal misconduct among youths in various correctional systems.

Overall, these data suggest that very large proportions of juvenile corrections clients will be subsequently arrested. Thus, the notion of youths being crime-free after court intervention is not correct. However, it is important to note that at least half the youths (previously judged as chronic and violent offenders) were not incarcerated in the 36-months after their commitment to a state juvenile correctional program. This refutes the popular

Proportion Rearrested

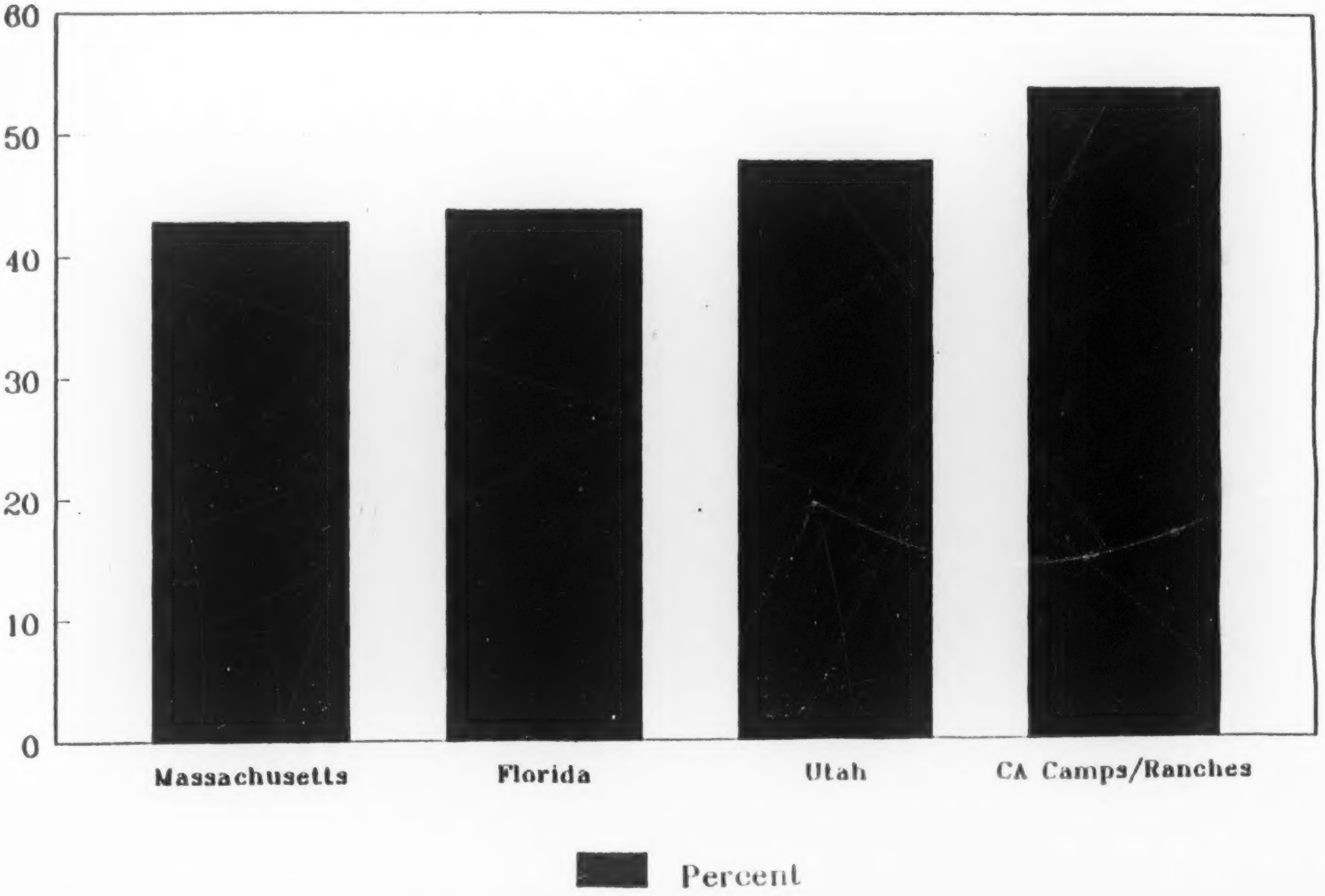
Within 12 Months



Source: Krisberg,et al., 1989:29.

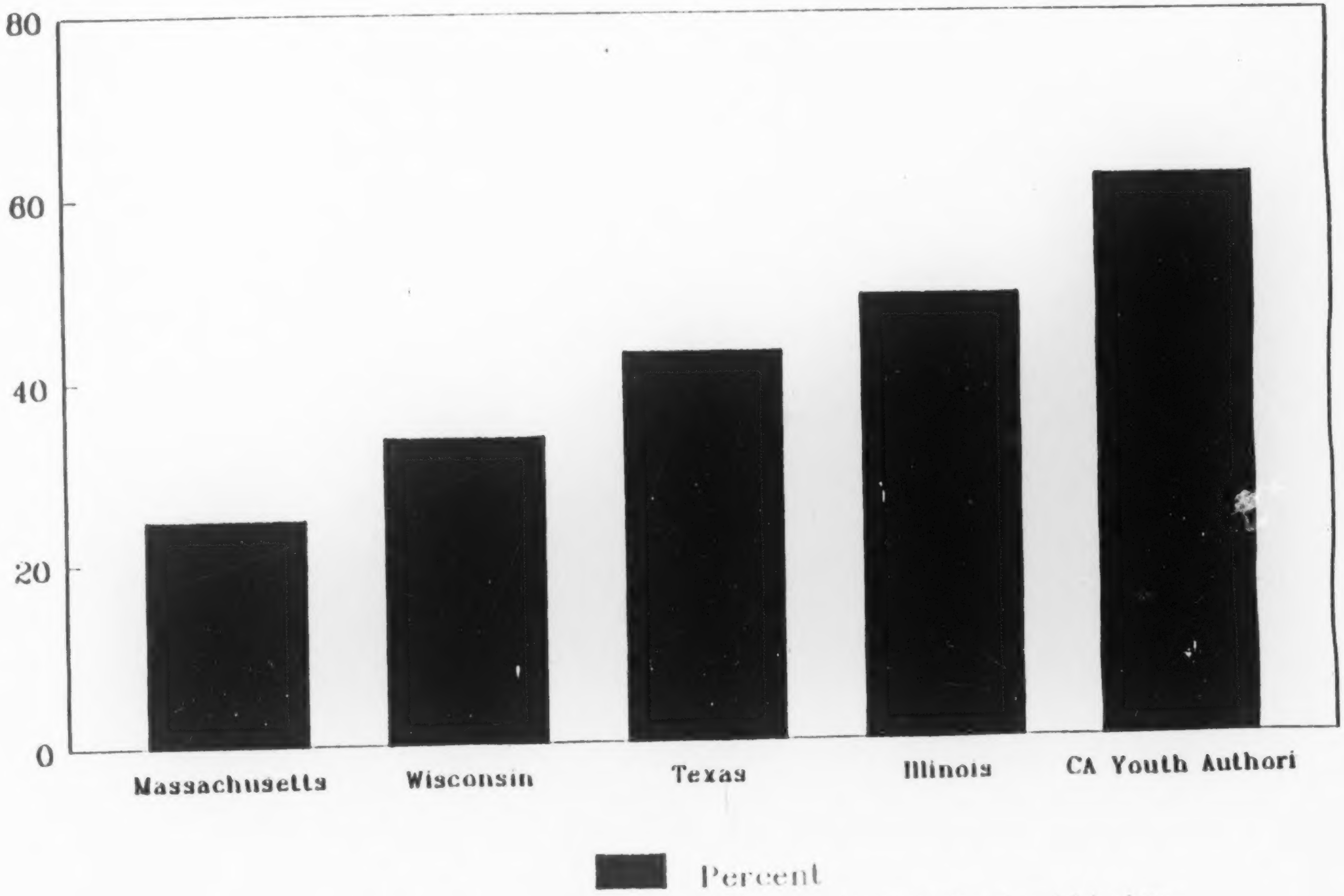
FIGURE 6

Proportion Reconvicted
Within 12 Months



Proportion Reincarcerated*

Within 36 Months



* Covers incarceration in state adult or juvenile facilities.

** Juvenile commitments only, 24 month follow-up misconception that the majority of serious juvenile offenders "graduate" into adult criminal careers and subsequently enter prisons.[11] Other research indicates that even though most youths continue to be arrested, the frequency and severity of their criminal behavior decline dramatically (Elliott, 1987; Murray and Cox, 1979; Krisberg et al., 1987 and Krisberg et al., 1989).

The fact that most juvenile offenders improve (even if they are not "cured") in terms of serious criminality can be explained by several distinct processes. One argument suggests that the alleged improvements are simply statistical artifacts produced by regression to the mean and maturation effects (Maltz, 1984). A variation on this theme is presented by Elliott (1987), whose self-report data show that the duration of serious and violent offense careers among juveniles is very short. Alternatively, some have asserted that the drop in offending rates is attributable to the deterrent or rehabilitative impact of court interventions (Murray and Cox, 1979 and Krisberg et al., 1987). At present, there is insufficient empirical evidence to chose among these competing hypotheses.

Despite an often intense ideological battle over the value of incarceration to reduce youth crime, the empirical data are inconclusive. There is no clear evidence that increased rates of confinement or longer terms of incarceration exert a deterrent effect on adolescent offenders (Schneider, 1984; Singer and McDowall, 1987). Neither is there unambiguous evidence that juvenile corrections facilities are always "schools for crime" (Murray and Cox, 1979). It is well documented that abusive practices and gang cultures dominate the larger juvenile facilities, however, these harms may not be automatically linked to future criminal behavior (Feld, 1977; Bartollas et al., 1976, Lerner, 1986).

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[11] / While some might interpret these results as showing the deterrent effect of incarceration, it is important to note that the large birth cohort studies of adolescents show similar declines in offending regardless of whether the adolescents were incarcerated.

Does Anything "Work" With Juvenile Offenders?

Disappointing assessments of juvenile correctional programs have been reported since the Gluecks' classic studies of the 1930s. In the mid-1970s, the influential work of Robert Martinson (1974) appeared to buttress the policy conclusion that "nothing works". Martinson's review of available evaluation studies was used both by those urging more punitive responses arguing for diverting more youngsters from the juvenile justice system. Others such as Finckenauer (1984) have demonstrated that fads, "pop psychology" and untested clinical insights have shaped juvenile corrections more than careful empirical studies.

More recently, some researchers have questioned the empirical validity of the "nothing works" conclusion. Interestingly, Martinson himself recanted his initial views and later reported data reaffirming the value of rehabilitative programs (Martinson, 1979). Canadian researchers Gendreau and Ross (1987) have compiled an impressive set of studies showing the positive results of correctional interventions. Others such as Greenwood and Zimring (1985) and Altschuler and Armstrong (1984) have identified what they believe are the critical components of successful juvenile correctional programs. These include (1) continuous case management, (2) careful emphasis on reintegration and reentry services, (3) opportunities for youth achievement and program decision-making, (4) clear and consistent consequences for misconduct, (5) enriched educational and vocational programming and (6) a diversity of forms of family and individual counseling matched to adolescents' needs.

Greenwood and Zimring highlight the promise of private sector programs such as VisionQuest, the Associated Marine Institutes, the Eckerd Foundation and Homeward Board that are alternatives to conventional juvenile correctional facilities.

There is a substantial body of evidence that many incarcerated adolescents can be managed effectively in well-structured community-based programs (see Figure 8). In the 1960s the California Youth Authority randomly assigned youths to either institutions or intensive community treatment units. Those in the community treatment units had much lower rates of parole failure after 12-month and 24-month follow-up periods (Palmer, 1971).[12]/

In Provo, Utah, Empey and Erickson (1972) randomly assigned

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[12]/ This finding was challenged by Lerman (1975) who argued that the differences in recidivism rates were attributable to how parole agents responded to subsequent delinquency. The apparently successful community treatment clients had a slightly higher number of arrests during the follow-ups, but a much lower rates of parole revocation.

Figure 8

MAJOR RESEARCH ON ALTERNATIVES TO INSTITUTIONALIZATION FOR SERIOUS JUVENILE OFFENDERS

STUDY	INTERVENTION	SETTING	SUBJECTS	OUTCOME MEASURES	RESULTS
Palmer, 1975*	Intensive, long-term counselling, group homes in lieu of state institutions	4 northern California counties	13-19 yrs. old	prevalence of recidivism, attitudinal changes, parole behavior, school adjustment, employment	Program clients performed better on all measures, except employment, than institutionalized youths. Both groups were equivalent on employment measures.
Empey and Lubeck, 1971*	Community-based group home in lieu of traditional training school	Los Angeles, CA	10-17 yrs. old	incidence and prevalence of delinquency	Large and equivalent drops in the incidence of reoffending in both groups; comparable results in both groups on prevalence measures.
Empey and Erickson, 1972*	Intensive supervision plus daily counseling vs. traditional probation	Provo, Utah	10-17 yrs. old	incidence and prevalence of recidivism	Intensive group performed better on all measures compared to traditional probation supervision with a matched group of youths.
Coates, et al, 1978	A range of community-based sanctions begun after closure of training schools	Massachusetts statewide	7-17 yrs. old	prevalence of recidivism, attitudes towards conformity	Recidivism rates of training school releases were lower than new community programs; community program youths showed better attitudinal improvement than institutionalized youths.
Murray and Cox, 1979	A range of sanctions for juvenile offenders	Illinois statewide	10-17 yrs. old	incidence of recidivism	Large reductions in incidence of recidivism; the most intensive community programs produced equivalent suppression effects to institutionalization.
Greenwood and Turner, 1987	Wilderness program in lieu of county correctional facility	San Diego, CA	10-17 yrs. old	prevalence of recidivism	VisionQuest clients performed better than comparison group.
Krisberg, et al, 1988	A range of community-based and small secure programs	Utah statewide	7-17 yrs. old	incidence and prevalence of recidivism	Large declines in the incidence of recidivism after correctional intervention.
Barton and Butts, 1989*	3 versions of intensive supervision in lieu of commitment to state facilities	Wayne County, Michigan	10-17 yrs. old	incidence of recidivism, self-reported delinquency	Experimentals performed comparably to controls on official recidivism measures; the intensive supervision group performed better on self-report delinquency measures.
Krisberg, et al, 1989	Community-based small secure programs	Massachusetts statewide	7-17 yrs. old	incidence and prevalence of recidivism	Youths in DYS programs showed sustained declines in incidence of recidivism; prevalence rates were lower than other states studied.

*Studies involve random assignment to experimental and control groups; other studies used post-test only or non-random companion groups.

youths to traditional probation versus more intensive supervision that entailed daily counseling sessions. The researchers were unable to implement a design that included some youths randomly assigned to Utah training schools. However, they did compare the recidivism of their experimental groups with youths sentenced to state corrections programs from other counties. The corrections youths had the worst failure rates. The intensive probation group performed better than the regular probationers.

In the Silverlake experiment in Los Angeles, California, Empey and Lubeck (1971) launched a more rigorous test of alternatives to incarceration. They randomly assigned youths to either a county correctional facility or a community-based group home emphasizing regular school attendance and intensive group therapy. After one year, both groups showed equivalent and large reductions in the number of arrests (but not complete desistence from delinquency). This led Empey and Lubeck to conclude that enhanced community-based programs were an appropriate alternative to traditional correctional placements.

On balance, the existing research indicates that highly structured community programs produce recidivism outcomes as good as confinement in traditional large-scale correctional facilities (Murray and Cox, 1979; Coates et al., 1978; Krisberg et al., 1987; Krisberg et al., 1989; and Barton and Butts, 1989). These studies show that community-based programs usually are less costly than traditional incarceration. While more rigorous research on community programs is definitely needed, the empirical evidence supports expansion of well-structured, non-institutional programs for non-violent adolescents.

Although the research cited above indicates that community-based interventions are at least as effective as institutionalization, it is perplexing that these programs do not produce much lower recidivism rates. Traditional juvenile corrections facilities are beset with violence and client management problems (Lerner, 1987; Feld, 1977; Bartollas et al, 1976). Several juvenile justice experts explain this paradox in terms of inadequate aftercare or community reentry services (Greenwood and Zimring, 1985; Coates et al., 1978). According to criminologists Alden Miller and Lloyd Ohlin:

> Delinquency is a community problem. In the final analysis the means for its prevention and control must be built into the fabric of community life. This can only happen if the community accepts its share of responsibility for having generated and perpetuated paths of socialization that lead to sporadic criminal episodes for some youths and careers in crime for others. (Miller and Ohlin, 1985:1)

There remains a genuine need to test improved methods of delivering intensive aftercare services. Re-entry programs must assist adolescent offenders returning to chaotic and often criminogenic family, peer and neighborhood environments.

The delivery of essential aftercare services is often blocked by the severe fragmentation of adolescent services in most communities. Juvenile justice agencies are not effectively linked to those organizations providing mental health, social welfare or educational services. It is common for delinquent youths and their families to have multiple staff from several agencies assigned to their case. These helping professionals are often unaware of the treatment plans and resources of one another. There is virtually no comprehensive and coordinated planning for delinquent youths. Consequently, there are many accounts of excessive duplication of efforts and service gaps (Krisberg et al, 1988). Juvenile justice officials often complain that child welfare and mental health agencies use juvenile correctional facilities as dumping grounds for adolescents they cannot or do not chose to manage. This problem is particular acute for older and more aggressive youths.

Interventions for Special Offender Populations

Three offender populations are of special public interest: sex offenders, drug dependent youths and violent youths. Arrests of juveniles for all three offense categories have been growing in recent years. The most dramatic increase has been for juveniles arrested from drug offenses. Unfortunately, the research literature on treatment approaches for these groups is limited. For example, almost all of the evaluative research for sex offender and drug treatment covers adult programs.

Sex offender programs have become increasingly popular within juvenile corrections agencies. However, there are still very limited treatment resources available for these youths in most jurisdictions. While there are several published clinical studies, the data on diverse treatment approaches are sparse. Interventions have ranged from psychoanalytic techniques, behavior modification, drug therapy (depo-provera) as well as more traditional intensive probation supervision strategies. Some of the preliminary results are encouraging. For instance, Davidson (1984) reports that incarcerated rapists who received behavioral oriented treatment had one-fifth of the recidivism rates of a matched sample of untreated inmates. In a 10-year follow-up study, Romero and Williams (1985) found that two randomly assigned groups of sex offenders in either group therapy or intensive supervision had relatively low rates of re-offending (14% and 7%, respectively).

These studies may not be effectively tapping a large amount of undetected sexual offending. For example, Abel at al.(1985) report that their sample of sex offenders committed an average of 44 offenses per year. Optimism over treatment efficacy must be guarded as a whole host of measurement and design issues have not been resolved (Gendreau and Ross, 1987).

The drug offender is now the center of national attention. But until recently, adolescents charged with drug offenses comprised a small fraction of the caseload of juvenile courts and juvenile corrections agencies (Snyder et al, 1989). As in the case of sexual offenders, there are very few specialized treatment programs for juvenile drug offenders.

The research on adult drug treatment programs suggests that several modalities have produced positive results (Gendreau and Ross, 1987; Kleber, 1989). While no single treatment works with the majority of drug dependent persons, a variety of interventions alone or in combination hold great promise. Methadone maintenance, therapeutic communities, the use of anti-depressants, and the seven step model of Alcoholics Anonymous all possess some empirical data backing their expanded utilization. Importantly, Kleber (1989) notes that virtually all drug programs produce better results when clients have viable employment options. This reinforces the need to strengthen aftercare or reentry services as part of the total treatment strategy.

The federal Violent Juvenile Offender (VJO) project is the most recent comprehensive approach to violent juveniles. In this project, adolescents charged with a violent felony, who possessed at least one prior Part 1 offense, were randomly assigned to a special correctional program or they were processed according to normal procedures in their jurisdiction. The test sites were Boston, MA, Newark, NJ, Memphis, TN, and Detroit, MI. The VJO program combined a short period of secure confinement with extensive and concerted efforts to reintegrate the offender back to community living. The program elements were derived from a theory of delinquent behavior and represented a mixture of program elements from several well-established community-based corrections programs (Mathias, DeMuro and Allinson, 1984).

The evaluators found that the test sites had great difficulty in implementing the model program. Few jurisdictions were prepared for the intensive levels of service called for by the program design. Other sites could not modify their normal processing methods in actualize the new approach. Interestingly, many other candidate sites were unable to find enough violent offenders to justify federal support for a VJO program (Fagan et al., 1984). However, in those locations where the VJO program was most faithfully implemented, the results were positive. In the best VJO sites, the experimental group performed better than the controls on virtually every measure of official and self-reported recidivism. The results were mixed in locales where full program implementation was not achieved. In one site in which the VJO program was poorly implemented, the controls actually performed better than the experimentals. The evaluators concluded that these data lend considerable support to the underlining theory of the VJO program (Fagan et al., 1990).

The VJO program demonstrated that changing traditional methods of dealing with violent offenders is complex. However, the preliminary research data suggest that sanctions involving shorter periods of secure confinement combined with enriched reentry planning and services may be more effective than current incapacitation strategies.

Treating Health Problems of Adolescents in the Juvenile Justice System

In 1979, the American Medical Association established its first health care standards for juvenile correctional facilities (American Medical Association, 1979a). Since that time there have been several inventories of the health problems of incarcerated youngsters as well as the development of mechanisms for certifying institutional health care facilities (American Medical Association, 1979b; National Commission on Correctional Health, 1984). Despite these efforts, some observers have noted little improvement in health care services for adolescents in correctional facilities (Costello and Jamison, 1987; AMA Council on Scientific Affairs, 1989).

The range of health care issues presented by juvenile offenders is quite broad. Many adolescents enter state custody with high rates of substance abuse, sexually transmitted diseases, unplanned pregnancies, emotional problems and neuropsychiatric disorders. Most adolescents have used drugs regularly and more than one-third were intoxicated at the time of their arrest (Bureau of Justice Statistics, 1988). Although males are rarely tested for sexually transmitted diseases, various studies of female delinquents report very high rates of vaginal diseases, gonorrhea and chlamydia (AMA, Council on Scientific Affairs, 1989:4-5).

Many incarcerated adolescents have histories of severe child abuse and sexual assault. They are likely to have histories of severe fractures and other injuries (Lewis et al., 1979;Shanok et al., 1981). Delinquent populations also are likely to posses unusually high rates of dental disease, eating disorders and neuropsychiatric problems such as learning disabilities, depression and personality disorders (AMA Council on Scientific Affairs, 1989:5).

Besides the preexisting health problems of incarcerated delinquents, there are health problems associated with the confinement experience itself. Institutionalized adolescents suffer from self-inflicted injuries, accidents, physical and sexual abuse and excessive weight gain. Juvenile facilities report high levels of violence, particularly in crowded living units; excessive use of isolation to control behavior and inappropriate use of psychotropic drugs (Costello and Jamison, 1987). Tragically, incarcerated youths (especially those held in adult jails) have rates of suicide that are 2.5 times those of the general adolescent population aged 15-19 years old (Mitchell, 1988).

Existing juvenile justice health standards are presently voluntary. A 1983 survey indicated that many facilities, especially those housing fewer than 50 youths, were not meeting the AMA health standards. Table 3 summarizes the results of this study. Moreover, there are virtually no data on the quality of trained personnel providing existing health care services.

Health care personnel face unique challenges in juvenile correctional facilities. For example, they may face the ethical bind of reporting alleged abusive behavior by staff versus maintaining effective working relationships with facility co-workers. In some cases, staff will argue that the alleged abuse was critical to preventing adolescents from endangering themselves or others. Facility staff may be asked to participate in the use of physical restraints, isolation or administration of drugs to control behavior.

Health professionals in correctional facilities work with adolescents at high risk to become HIV-infected. They face a

Table 3

Institutional Compliance with National Health Standards for Juvenile Facilities, 1983

	Size of Facility		
Minimum Standard	Small[1] (n=119)	Medium[2] (n=72)	Large[3] (n=24)
Regular Sick Call[4]	52%	86%	83%
Initial Medical Screening	62%	51%	79%
Complete Health Appraisal Within 7 Days of Admission	66%	79%	83%
On-Going Dental Care	16%	69%	--
On-Going Mental Health Services	32%	71%	--

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[1] Facilities with an average daily census of 50 or less

[2] Facilities with an average daily census of 51-200

[3] Facilities with an average daily census of 201 or more

[4] Defined as once per week in small, three times per week in medium and five times a week in large facilities.

significant responsibility to educate both adolescents and staff on preventing transmission of AIDS.

Health care financing for confined delinquent populations is especially problematic. For example, current Medicaid guidelines prohibit federal reimbursements for health services within correctional facilities. Few confined youths possess health insurance and thus, health care services are chronically underfunded. Federal policies preclude physicians from receiving adequate financial compensation for the services rendered to institutionalized populations. Thus, it is difficult to attract the participation of highly trained and experienced health care personnel to care for children in urgent need of medical attention.

A recent AMA report recommends that state and local county medical associations become involved in upgrading health care in juvenile correctional facilities. It is urged that medical professionals work to discourage (1)the detention of youths who are mentally ill, (2)the housing of youths in adult jails and (3) the use of non-scientifically supported therapies to alter behavior. The AMA committee also calls on the U.S.Congress to reexamine the funding of health care in delinquent institutions, especially the role of Medicaid in financing these programs (AMA Council on Scientific Affairs, 1989:13-14).

The area of educational services for handicapped youths is likely to become a major issue for the juvenile corrections system. Both the Educational for All Handicapped Children Act and Section

504 of the Vocational Rehabilitation Act provide substantial federal statutory justification for improving diagnostic and special educational resources (Shauffer et al., 1987). However, the inadequate funding of most juvenile corrections agencies makes it difficult to achieve the required levels of services and care.

The Costs of Juvenile Justice

Although data on the costs of juvenile justice services are not readily available, it is probable that the nation spends at least $15-20 billion a year to arrest, prosecute and control juvenile offenders (BJS, 1987). Annual expenditures on juvenile confinement in public facilities exceeds $2 billion per year (Allen-Hagen, 1988). There are large variations among states in spending on juvenile services; Southern states spend the least per incarcerated adolescent and Northeastern states the most.

Juvenile corrections agencies also receive partial financial assistance through federal and state educational, vocational and welfare funding. For example, a recent California legislative analysis reported that over $150 million annually in AFDC funds are spent on group homes and foster placements for juvenile court clients.

There are few rigorous analyses of the cost effectiveness of various juvenile justice interventions. However,studies of Utah and Massachusetts indicate that substantial fiscal savings are realized through the extensive use of community-based programs in lieu of training schools (Krisberg et al., 1988: Krisberg et al., 1989).

The principal cost savings in Utah and Massachusetts come from very limited use of secure confinement and shorter periods of institutionalization (Baird et al., 1989).

Future Environmental Forces Impacting Juvenile Justice

In the past decade the size of the adolescent population has been shrinking. Despite the fewer number of teenagers, the proportion of adolescents processed through the juvenile justice system has grown. Beginning in the 1990s, the children of the "baby boomer" generation will reach their adolescent years. By 1995 there will be another peak in the adolescent population, although not of the same magnitude as the mid-1970s. Still, it is highly likely that the currently overloaded and underfunded juvenile justice system will face even higher caseloads in the future.

In addition to the growing adolescent population, juvenile justice agencies will be asked to manage adolescents reared in extreme poverty and young people who have had extensive involvement in drug use. The proportion of children reared in single parent families living below the poverty level has increased since the late 1970s. Urban neighborhoods have become increasingly concentrations of impoverished women and children. The exodus of more successful families has left behind fewer positive role models of upward mobility (Wilson, 1988).

The plight of the "truly disadvantaged" has been exacerbated by growing problems of homelessness and drug addiction. For example, in New York City alone, there are over 10,000 children living in shelters or welfare hotels: less than half of these children are attending school on a regular basis. Drug abuse, particularly addiction to a form of cocaine known as "crack", has increased among minorities and the poor; even as drug use among middle class Americans has sharply declined (NIDA, 1989).

A large number of babies are born addicted to "crack". The Center for Disease Control estimates that there are already over 300,000 "crack babies". It is feared that these children will face severe developmental problems and will experience enormous difficulties in conventional school settings. For example, the Los Angeles Unified School District has created special pre-school programs for the children of drug addicts to forestall greater problems when these children enter kindergarten.

Another ominous trend can be seen in the emerging labor market. The job prospects of low income adolescents are much more difficult than in the past. The transformation of the economy away from industrial production and manufacturing towards the service sector makes successful employment much more tenuous for those without at least a high school degree. Yet, urban school dropout rates remain at record high levels (Duster, 1987). Sociologist Troy Duster suggests that whereas adolescents once dropped out of school into the factory, today youths leave school to enter the world of drug trafficking and crime. The U.S. economy faces a startling contradiction: lots of high technology jobs without potential candidates and many youths locked out of the labor market because of inadequate education and training. These economic forces are likely to heavily impact adolescents enmeshed in the juvenile justice system. These young people have low educational attainments and have virtually no access to the limited community-based job training resources now available.

These dire social facts are further complicated by the severe cutbacks in governmental funding for programs designed to assist poor families and children (Currie, 1986). Declining resources in the child welfare system have propelled the most troublesome adolescents to the juvenile justice system. The demand for institutional and out-of-home placements is growing. For instance, in several California counties large proportions of youths held in detention centers are waiting the availability of foster care or group home beds. Since many juvenile justice clients and their siblings are also served by child welfare agencies, the shrinking social welfare and special education resources reduce the treatment resources available to the juvenile court.

These environmental forces mean that the juvenile justice system will handle many more deeply troubled adolescents in the next several years. Juvenile correctional facilities are becoming increasingly overcrowded. In 1987, over 40% of the youths in detention centers and 52% in training schools were housed in overcrowded conditions. Due to the enormous crowding in adult prisons, it is unlikely that juvenile administrators will be able to successfully compete for scarce public revenues to construct new facilities. Moreover, the nation's experience with prisons and jails demonstrates that the sole reliance on building new beds rarely solves overcrowding.

Besides overloaded and antiquated buildings, the juvenile justice system will face the urgent need to recruit and train new personnel. The juvenile justice system, like most corporations, will have to complete for the declining number of workers in the next two decades. Salaries within juvenile justice agencies traditionally have been lower than comparable salaries in the adult justice system and well below salary levels in the private sector. Training for juvenile justice personnel is severely limited. With the exception of federally-funded training for juvenile court judges, training resources for other juvenile justice personnel are virtually nonexistent.

Models For the Future

The foregoing analysis of the juvenile justice system portends very difficult times for already beleaguered agencies. Despite some obviously negative trends, however, there are important reasons to remain optimistic. In particular, there are several policy and program models that could offer pathways out of the juvenile justice system's current turmoil.

Removing Children From Jails

One goal of the early juvenile court legislation was to rescue children from adult jails. Adolescents held in adult facilities were often physically and sexually abused by inmates and staff.

Suicide rates among adolescents in jails are much higher than for youths held in juvenile facilities (Schwartz, 1989). For the next nine decades jail removal remained high on the reform agenda, but with few actual successes. Even as late as the mid-1970s there are estimates of nearly 500,000 juveniles admitted to adult jails and lockups (Sarri and Vintner, 1974). However, in 1980 the Congress enacted an amendment to the Juvenile Justice and Delinquency Prevention Act that has profoundly changed laws and practices. The 1980 amendment required that states receiving federal funding accomplish complete removal of juveniles from jails within a five-year time period (Schwartz, 1989).

Although several states have been unable to meet the Congressional mandate, there has been a major decline in the numbers of juveniles admitted to jails. In 1986 the number had declined to approximately 60,000 -- a drop of 88% from the pre-amendment period. The Congressional action led many states to change their laws to severely restrict or abolish the jailing of children. In each of these instances the new legislation required the support of a very broad coalition of criminal justice and child advocacy groups (Steinhart, 1988). Further, the JJPDA has been interpreted by some federal courts as creating a private cause of action under existing civil rights laws (Swanger, 1988). This gives child advocates another tool to press for complete removal of children from jails (Soler, 1988).

The jail removal movement demonstrates that the goals of child protection and public protection are not antithetical. Moreover, many communities discovered that sensible alternatives to jailing, such as temporary shelter care or home detention, can be created without requiring large expenditures of public funds (Steinhart, 1988). Also, elected officials found that they could support humane policies without suffering the alleged political liability of appearing to be soft on crime. Successes in jail removal illustrate the power of legislative action to discourage harmful practices.

Case Management: The New York City Department of Juvenile Justice

For years, New York City's detention center was nationally known as one of the most brutal and inhumane places housing troubled youngsters. The Spofford Center became the target of repeated lawsuits. In 1979, the Mayor created a new city agency, the Department of Juvenile Justice (DJJ) and charged it to accomplish a major overhaul of the detention system. A former child advocate and attorney, Ellen Schall, was recruited to lead the change process.

The first item on the reform agenda was to reduce crowding at Spofford. DJJ staff created non-secure detention placements for youths not requiring secure custody. They also streamlined court procedures and reduced delay periods from arrest to hearings. Youth sentenced to state juvenile programs were moved more quickly into those placements. These steps reduced the detention population almost in half.

Next, the DJJ began reconceptualizing their approach to detention. The agency asserted that the brief period of detention should be turned into an opportunity to identify medical, educational and social service needs and to begin meeting those needs. A sophisticated educational testing and remedial program was introduced. DJJ implemented one of the nation's few fully accredited juvenile corrections medical programs. Detained youths receive 24-hour comprehensive medical, dental and mental health services. Many previously undiagnosed health problems are discovered and resolved (Department of Juvenile Justice, 1989).

DJJ developed a complete case management system for each youth. This system organizes information about each youngster and monitors the provision of remedial services. The case management approach is fully computerized and assists staff in delivering highly individualized services. The Department has also launched a voluntary aftercare program in which youths and the families receive supportive counselling even after they are discharged from Spofford.

In 1989, DJJ won approval to abandon the antiquated Spofford facility. The future New York City detention system will consist of two small regional secure facilities and expanded non-secure detention placements.

The DJJ has demonstrated that detention need not be "dead time" while youths await court hearings. Detention can be a time to respond to urgent unmet needs of very troubled young people. In New York City detention affords the community the chance to identify and work on severe learning problems of delinquent adolescents. The DJJ works closely with social service and educational personnel to get their clients plugged back into school and family environments. Thus, more than just a temporary holding action, DJJ has been transformed into a truly preventive agency working with extremely high risk youngsters.

The DJJ has received national acclaim for excellence in public sector management from experts such as Tom Peters, the Ford Foundation and Harvard's Kennedy School of Government. What some have called the "Spofford Miracle" demonstrates the potential for humanistic changes within juvenile justice agencies (Krisberg, 1988). Further, DJJ's case management approach could enhance the treatment of youths in most juvenile programs. As with the Massachusetts experience, New York City found that more judicious use of costly secure confinement allows agency resources to be redirected to enhance the level of care for more adolescents.

Other Innovative Juvenile Justice Programs

In addition to the systemic reforms described above, there are several individual programs that deserve special mention. These programs share in common a fresh approach to the management of serious juvenile offenders.

The Florida-based Associated Marine Institutes (AMI) operates a diverse multi-state network of programs for juvenile offenders. Most youths live at home or in foster families. Each day they are involved in AMI programs that include training in boat repair, diving and marine biology. AMI also operates an excellent educational program with an exemplary record of assisting youths to complete their high school educations. Each of the local AMI programs recruit local volunteers who raise money for the programs and become directly involved with the youths. There is an explicit and clear aftercare plan for each youth. Research by Tollet (1987) indicates that AMI graduates have recidivism rates as good or better than many Florida programs.

In addition to AMI's day treatment programs, the agency also operates a small wilderness program for adolescents who would otherwise be sent to adult prisons. Called the Florida Environmental Institute, this program engages youths in hard and productive environmental work in the Florida Everglades. The isolation of the program makes escape unfeasible and eliminates the need for prison-like security measures.

Another non-traditional residential program, VisionQuest, also employs wilderness challenges and intensive group therapy for serious juvenile offenders. A recent study by the Rand Corporation suggests that VisionQuest youths from San Diego, CA performed better than similar offenders sent to a county correctional institution (Greenwood et al., 1988).

The Juvenile Division of the New Jersey Department of Corrections operates community-based programs for over half the youths committed to its custody. These day treatment or group home programs enroll adolescents in local community colleges. The Juvenile Division day treatment programs emphasize vocational training and work placements. Some adolescents learn landscape architecture; others operate a New Jersey concert center.

In partnership with philanthropist Ray Chambers, the Division runs a fast food franchise "Jersey Mikes". Youthful offenders refurbished the building and have been trained to operate all aspects of the business. The business is organized as an employee stock option plan -- youths who remain crime-free own shares in the franchise and in all future business enterprises. They are employed, learning entrepreneurial skills and developing personal capital.

The Key Inc., a program headquartered in Massachusetts, pioneered the concept of outreach and tracking. Young offenders live in the community, however they are closely supervised on a 24-hour, seven-day-a-week basis. Youths must conform to precise and individualized plans involving schooling, work, counseling programs and victim restitution. If youths fail to meet program expectations, they may be securely confined for a brief period (sometimes a few days). Key Inc. operates a limited number of beds to temporarily house their clients who require residential services before returning home.

The Key Inc. program pays careful attention to high quality staff training and supervision. Further, Key requires that staff move on to other jobs after 12-14 months employment. This rule is intended to prevent staff "burnout" that is typical of intensive supervision programs. Former staff of Key Inc. are so well-trained that they are valuable candidates for other human service agencies (Bakke et al., 1989).

The innovative programs described above are a small sampling of the possibilities for new directions in handling serious delinquents. All of these efforts involve novel collaborations between public and private agencies. These programs challenge the conventional wisdom that prison-like institutions offer the only option for serious juvenile offenders. Successful juvenile programs emphasize intensive, individualized services and strong management accountability for delivering necessary supervision and treatments.

The Role of The Federal Government

Beginning with the creation of the U.S. Children's Bureau in 1912, the federal government has played an increasing role in the prevention and control of juvenile crime. The Children's Bureau collected juvenile court data, conducted surveys and published reports on juvenile justice topics. In the 1940s other federal agencies such as the National Institute of Mental Health began getting involved in delinquency issues.

Growing alarm over adolescent crime led President John Kennedy to establish the President's Committee on Youth Crime that funded large scale delinquency prevention programs in several major urban areas such as the Mobilization for Youth and Harlem Youth Opportunities Unlimited. These programs were the early testing grounds for many of the concepts that later guided the federal War on Poverty of the 1960s (Moynahan, 1969).

In 1967, the Presidential Commission on Law Enforcement and the Administration of Justice conducted a comprehensive review of juvenile justice and recommended programs of diversion and deinstitutionalization. The Commission advocated the creation of youth service bureaus to assist communities to better organize their responses to troubled young people. The following year the Congress enacted major crime control legislation, including a federal grant program operated by the new Law Enforcement Assistance Administration located in the Justice Department. Another new federal law called for grants, administered through the Department of Health, Education and Welfare, to states and localities to improve juvenile justice and delinquency prevention programs.

In the early 1970s the U.S. Senate, Subcommittee on Juvenile Delinquency conducted nearly five years of exhaustive investigations and concluded "... that our present system of juvenile justice was failing miserably" (U.S. Senate, Committee on the Judiciary, 1975:3). These hearings focused on the continuing problems of children held in jails, status offenders housed together with violent offenders, the lack of trained personnel and inadequate prevention resources, along with a host of other issues.

The passage of the Juvenile Justice and Delinquency Prevention Act (JJDPA) of 1974 represented a major step forward in the federal role in juvenile justice. The law required states to remove status offenders from secure confinement and to separate adult and juvenile offenders as a condition of receiving federal funding. The JJDPA also mandated new data collection and research as well as demonstration projects to explore "advanced practices". During the

Carter administration, the budget of the Office of Juvenile Justice and Delinquency Prevention (OJJDP) grew to over $100 million per year, mostly in the form of state block grants. In 1980, the JJDPA was amended to require the complete removal of juveniles from jails and police lockups. The OJJDP played a major role assisting jurisdictions to implement the Congressionally-mandated reforms.

During the Reagan administration, the federal juvenile justice program was significantly altered. The original focus on prevention and diversion was replaced with concern over violent offenders, pornography, missing children and school safety (Regnery, 1986). Most significant, the Office of Management and Budget proposed that funding for OJJDP be eliminated. For eight consecutive years, Congress restored an appropriation for OJJDP over the objections of the Justice Department and OMB. As with other government programs, the total allocation to OJJDP decreased sharply during the Reagan years.

President Bush's first budget recommended a drastic cut in funding for OJJDP. Moreover, OMB announced that its plan to fund expanded federal drug programs would draw upon "savings" from OJJDP. At present, the Congress seems inclined to provide continued budgetary support for the OJJDP. However, the federal deficit and new national funding priorities place the future of OJJDP very much in doubt. The precarious fiscal situation of OJJDP has severely hurt staff morale and limited the agency's capacity to sustain a leadership role among juvenile justice practitioners.

Strengthening the Federal Juvenile Justice Role

The National Association of State Advisory Groups (NASAG) produces annual reports to Congress and the President recommending improvements in the federal justice program. The group is a national association of citizens appointed by state governors to oversee the disbursement of the federal juvenile justice block grant funding. Their proposals encompass the perspectives of concerned citizens, elected officials and leading juvenile justice professionals. The NASAG has proposed both structural reforms in OJJDP and specific substantive areas for increased federal attention.

The NASAG has called for creation of an independent policy board to set long-term program directions for OJJDP. The federal program currently gives the OJJDP administrator virtually unrestrained authority to rapidly change federal juvenile justice priorities. A powerful policy board, similar to the governance structure of the National Institute of Corrections, could promote greater policy continuity and provide critical input from the field. The NASAG also proposed that the administrator of OJJDP have substantial experience and qualifications in juvenile justice or delinquency prevention.[13] Other proposals called for OJJDP to publish,in advance of the fiscal year, its program plan. It was recommended that OJJDP make greater use of the Federal Coordinating Council on Juvenile Justice and Delinquency Prevention to better organize federal programs, particularly in the prevention area.

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[13] In 1984 the JJDPA was amended to require the administrator to have a juvenile justice background. The Congressional intent was restated in 1988 amendments. Yet, the first nominee of the Bush administration to head OJJDP possessed little or no experience in juvenile justice.

On substantive matters, the NASAG has urged OJJDP to prioritize jail removal and more actively protect the civil rights of confined adolescents. It has called for improved federal data on the characteristics of youths in custody and the conditions of confinement. The Congress enacted many of these suggestions in 1988 amendments to the JJDPA. The NASAG has highlighted the issue of minorities in the juvenile justice system as an area for priority action. There are also proposals to devote a greater share of OJJDP funds to improving juvenile justice for Native Americans and U.S. Pacific Islanders -- groups that have received little OJJDP attention over the last decade.

Implementing the NASAG proposals would do much to restore the credibility and influence of OJJDP. Of equal importance is strengthening the program's support within the Executive Branch. It may be appropriate to revisit the wisdom of locating the OJJDP in the Department of Justice. Fifteen years ago this decision was logical because of the Justice Department's interest in juvenile justice reform and its extensive state block grant program. However, Congress may wish to examine whether the Department of Health and Human Services might provide better policy and administrative support for OJJDP. In view of the well-documented unmet psychological, medical and other service needs of delinquents, the linkages with other HHS agencies might be beneficial. Further, HHS contains other relevant programs particular in the areas of family issues and the handicapped that are closely related to juvenile justice concerns.

Switching the cabinet-level jurisdiction over the federal juvenile justice programs should be prudently considered. It may be that OJJDP would confront formidable "turf battles" in the large Department of Health and Human Services. It is also unknown if the change would help or hinder the OJJDP's mission to remove children from jails. While the linkage with HHS might enhance OJJDP's capacity to plan and implement delinquency prevention programs, the impact on OJJDP's juvenile justice reform agenda is unclear.

One obvious need is for better coordination of existing legislation such as the Federal Adoption Assistance Act and the JJDPA, two important Congressional actions to improve the care of neglected, dependent and abused youngsters. An important but neglected mechanism to strengthen federal juvenile justice goals is the Federal Coordinating Council mentioned previously. Established by the JJDPA, the Council is chaired by the Attorney General and consists of cabinet-level representatives from all Executive Branch departments concerned with youths. The Council has rarely been convened in the last ten years. However, such an interagency body could afford the federal government opportunities for more integrated approaches to the problems of young people. For instance, the JJDPA requires that OJJDP pursue a concentration of federal efforts. This concentration is crucial because OJJDP's budget constitutes a tiny fraction of total federal expenditures in the delinquency prevention area. Even modest coordination efforts would greatly expand the impact of the JJDPA. The Coordinating Council is an appropriate forum to discuss and resolve complex issues of interagency cooperation. At present, interagency efforts are negotiated on an ad hoc basis among motivated staff of related federal programs. The Council could also research and plan better utilization of federal and state expenditures for delinquency control and prevention.

Making Juvenile Justice An Adolescent Health Care System

Contemporary juvenile justice policies and practices are far from the idealistic notions that motivated reformers to create a special children's court. Many child advocates question whether the juvenile justice system could ever become either a full-fledged justice system or a child welfare system (Krisberg, 1988). It is uncertain that juvenile justice can simultaneously pursue these distinct goals. The philosopher George Herbert Mead noted that crime control is sought through "hostile procedures of law and...through comprehension of social and psychological conditions" (Mead, 1961:882). Mead did not believe that these two approaches could be combined. "The social worker in the court is the sentimentalist, and the legalist in the social settlement, in spite of his learned doctrine, is the ignoramus" (Mead, ibid).

The juvenile justice system's fundamental dilemma is balancing the need for distributive justice with requirements that legal interventions be individualized and flexible. This balancing act is complicated by chronically inadequate resources. While political rhetoric may swing back and forth from punitive themes to rehabilitation, actual court practices are resistent to change.

But, what if the society chose to rebuild the juvenile justice system to become a more effective adolescent health care system? What are the preconditions of that reconstruction?

Delinquency as a Public Health Issue

First, serious youth crime must be reconceptualized as a public health problem as well as a law enforcement issue. As with most other health issues, this perspective would immediately direct priority attention to preventive strategies. By definition, the juvenile justice system is reactionary. A public health perspective would allow serious juvenile offenders to be understood both as victims and victimizers. The linkage is undeniable between physical abuse, parental neglect and violent youth crime. This does not mean that youths are unaccountable for their misconduct. However, a public health perspective offers the possibility of comprehending the origins of youthful violence and forming rationale responses.

What if the issues of teenage pregnancy and venereal disease remained totally cast in the rhetoric of moral condemnation?
This might provide an outlet to vent frustration, but it would not reduce the number of teenagers having babies or stop the spread of dangerous communicable diseases. The purely moralistic posture also discourages the kinds of inquiries and experimentation that might improve the performance of the juvenile justice system.

A public health approach to delinquency would inevitably lead us to explore environmental factors in the promotion of delinquency. Greater attention must be paid to the harmful impact of easy availability of guns and drugs as well as the mass media's commercialization of violence. We must better understand how violence becomes defined as an integral part of manhood in certain communities and how these dangerous socialization processes can be modified.

Implementing a Developmental Perspective

Related to adopting a public health paradigm, the juvenile justice system must genuinely build an adolescent development perspective into its basic policies and practices. The best research on adolescent development should be incorporated in the professional education and continuing training of juvenile justice practitioners. In addition, elected officials enacting laws and defining agency policies need more in-depth understanding of the data on adolescent development.

If current research on adolescent development and delinquency is incomplete, then a high priority must be placed on remedying our knowledge gaps. This often entails longitudinal research designs that require sizeable funding investments over a sustained period. With few exceptions, only federal agencies such as OJJDP, NIMH and NIDA have the capacity to support these inquiries. The development of new knowledge and its dissemination to policy makers and practitioners may well be the federal government's most important contribution to preventing and controlling youth crime.

Protecting Adolescents' Legal Rights

Improving juvenile justice must also involve better legal protection for young people. There is little evidence that secret and informal court procedures advance the child protection. It is worth noting that most of the model programs described in this paper pay close attention to protecting the legal rights of young offenders.

The Institute for Judicial Administration and the American Bar Association (IJA-ABA) have produced a comprehensive set of juvenile justice standards that appropriately balance the legal rights of children and child welfare considerations (Flicker, 1982). The IJA-ABA standards can be used as a blueprint for any jurisdiction concerned about fair treatment of young people.

Besides a framework of justice, adolescents also need genuine access to justice. Too often the provision of legal assistance to juveniles is inferior or nonexistent (Feld, 1989). Many adolescents and their families waive their right to legal counsel without full comprehension of the consequences of that decision (Schwartz, 1989; Grisso, 1980). Some have proposed to remedy this situation by creating an absolute non-waivable right to counsel. Effective legal representation is the prerequisite to all other procedural safeguards (Feld, 1984). Since most juvenile court clients are indigent, proper attention must be given to the quality and training of public defenders and assigned counsels.

Increasingly, proponents of juvenile rights recommend that court proceedings should be open to the public and the media (Schwartz, 1989). Closed hearings have not been particularly successful in shielding juveniles from negative publicity in high profile cases. Moreover, the hidden nature of juvenile court operations contributes to perceptions that the court is overly lenient. Where open hearings have been tried, there have been few negative consequences for juveniles (Schwartz, 1989).

A related issue involves the quality of juvenile court judges. In many jurisdictions, assignment to the juvenile court is not a highly sought after judicial appointment. The juvenile court often is a dead-end along a judicial career track. Even deeply committed judges may seek rotation out of the juvenile court to advance personal legal careers.

Juvenile court judges must sometimes administer detention, probation and social service agencies. In the discharge of administrative duties, juvenile court judges face complex role conflicts. As judges they must assess the legality of the state's treatment of delinquent youths; as administrators they must defend their employees as well as protect agency budgetary priorities (Rubin, 1979; Schwartz, 1989).

In recent years, OJJDP has not funded programs designed to improve the legal rights of adolescent offenders. Since the Reagan years, groups litigating the constitutional rights of incarcerated adolescents have received no federal grants. Federal judicial training programs have centered on disposition and placement concerns, rather than on safeguarding the legal rights of young people.

Treating the Whole Child

The current organization of adolescent social services is primarily defined by agency turfs and funding categories. This situation contributes to fragmented and often wasteful deployment of social service resources. It is not uncommon for the same youth and family to have a multiplicity of caseworkers assigned to them. From the vantage point of each helping professional the youth is a delinquent, an abused child, a youth in need of special education services or a welfare recipient. Other service providers may be working with the other family members or siblings. In the typical scenario, no one possesses an overview of all of the adolescent's needs. There is rarely a comprehensive and integrated treatment plan.

The categorical nature of funding and the lack of interagency collaboration leads to difficult battles to include or exclude certain clients. Older adolescents, particularly those with histories of mental illness and aggressive behavior, are most likely to be excluded by agency selection criteria. These youths generally end up in juvenile justice institutions because public correctional agencies cannot refuse to take custody of adolescents lawfully committed to their care. Thus, juvenile corrections must manage a wide variety of youngsters that no other agency wants to serve. As fiscal crises place pressure on social service agencies, the juvenile justice system is the ultimate net.

This structure inhibits the accountability of government agencies to protect adolescents and promote public safety. Further, the availability of treatment resources is highly dependent on political and media whim -- homelessness last year and drug abuse this year. A more cost-effective approach would involve coordinated and integrated planning of juvenile justice and related human services. The case management approach of New York City's DJJ and the Massachusetts DYS regional case management system are examples of how services could be reorganized. Recently, Contra Costa County, CA has organized interagency teams of youth workers to concentrate on the problems of homeless and runaway youths. It is too soon to evaluate the success of this effort, but such boundary crossing strategies are needed.

At the federal and state level, careful study should be given to reducing the categorical approach to funding programs. This conventional budgetary strategy contributes to a focus on symptoms rather than on underlying causes. Modest experiments with more flexible financing of prevention and intervention programs are needed. The basic objective of these field experiments should be treating the whole child within his or her family and community context. New models of service delivery must be conceptualized and explored.

The juvenile court could be pivotal in fostering innovative service delivery strategies. Other than state and federal funding sources, juvenile court judges as the most important nexus for virtually all adolescent social and mental health services. Judges have extraordinary powers to order the delivery of specific treatment plans. Moreover, juvenile court judges often are knowledgeable and respected advocates for troubled young people. Given the key role of the judiciary, their training and active involvement in planning new service systems is vital. The Court Appointed Special Advocate (CASA) which works on permanency planning for abandoned and abused children is an excellent example of judicial leadership to protect vulnerable youngsters (National Council of Juvenile and Family Court Judges, 1988).

Concluding Observations

American legal scholar, Roscoe Pound, wrote that the juvenile court was a magnificent step forward in Anglo-American jurisprudence. However, Professor Pound also worried that the virtually unrestrained powers of the court could make it a "star chamber" (Pound, 1957). This ambivalence over the juvenile court's potential for helping or harming adolescents is shared by contemporary child advocates (Schwartz, 1989).

The juvenile justice system is beset by major societal forces and does not lack for critics. Several paths are available to guide the future of the juvenile justice system. One direction would amplify the current expansion of punishment and of "holding youth

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and families more accountable for their misdeeds" (Rossum et al., 1987). An alternative approach entails rediscovering the historic mission of juvenile justice to provide individualized and compassionate care for delinquent youths (Krisberg, 1988).

The punitive direction fits with current political rhetoric about "getting tough" with criminals. The doubling of the prison population and the large growth in juvenile incarceration are products of the "hard-line" approach. Paradoxically, the urge to punish has not matched with public support to raise taxes to pay for a more vengeful justice system. Consequently, conditions of confinement are worsening, challenging basic American values about cruel and unusual punishment.

The public actually seeks a juvenile justice system that deals firmly with violent adolescents but also focuses attention on treatment and rehabilitation. The model programs described in this paper suggest how public wishes can be actualized.

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Background Paper

Review of Programs for the Prevention and Treatment of Delinquency

Prepared for the
Office of Technology Assessment
Congress of the United States

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Introduction

Juvenile delinquency is a complex problem that exacts a substantial and continuing toll on our society. In 1988, 33.1% of the arrests in the United States for the eight serious crimes listed as the FBI's Index Offenses were of juveniles aged 10 to 18 years, an age group that comprises only 13% of the population (Federal Bureau of Investigation, 1989; U.S. Bureau of the Census, 1989). Although a careful analysis of official statistics revealed that the arrest rate for juveniles in the population has remained remarkably stable since 1971 (Cook & Laub, 1986), it is clear that juveniles are responsible for a disproportionate amount of crime (Farrington, 1986; Greenberg, 1985; Hirschi & Gottfredson, 1983; Osgood, O'Malley, Bachman, & Johnston, 1989).

Unfortunately, if projections based on basic demographic trends are to be trusted, the problem is likely to get worse before it gets better. Social indicators suggest that recent declines in the proportion of teenagers in the population may soon reverse as children of the "baby boomers" come of age (Wilson, 1987). Also, emerging trends in family demographics reveal that more children than ever are growing up homeless, in poverty, and in single parent homes, while funding for social programs is decreasing (Conger, 1988; Garwood, Phillips, Hartman, & Zigler, 1989; Loury, 1987). Although the exact mechanisms and likely strength of the relationships between these conditions and juvenile crime are still ambiguous, these trends clearly illustrate that the press to find adequate methods for intervening with juvenile delinquents will only increase.

To add to this problem, there is the further question of how well equipped the present juvenile justice system is to provide focused leadership in this task. Over the last 25 years, significant developments in case law (see Mnookin, 1978; Wadlington, Whitebread & Davis, 1983) and legislative initiatives (most notably the Juvenile Justice and Delinquency Prevention Act of 1974 and its renewals) have blurred the role of the juvenile justice system. Procedural safeguards for the processing and rehabilitation of adjudicated adolescents by the court have been expanded, and localities have been given more responsibility for mounting programs for preventing delinquency (Empey, 1982). The juvenile justice system is in considerable flux; trying to reconcile its longstanding philosophical roots in individualized intervention, its more recent emphasis on due process and the protection of juvenile rights, and its demonstrated interdependency with the child welfare and mental health service systems. What role the juvenile justice system might be expected to take in ensuring adequate prevention and treatment efforts for delinquency is an open question.

Much of what might make sense to do about responding to the continuing problem of delinquency rests on an assessment of the effectiveness of existing approaches to the prevention and treatment of delinquency (Binder, 1988). The purpose of this chapter is to provide an overview of much of what is known in this regard. It must be mentioned at the outset, however, that this is not a straightforward task.

The necessary information is inevitably scattered, often incomplete, and sometimes contradictory. Also, it is virtually impossible to review and critique all of the program reports relating to delinquency, and some approaches that might have been included for other reviews might have been overlooked or ignored here. We have necessarily limited our review to the major types of efforts to provide programming for antisocial or delinquent behaviors handled by the juvenile justice system. We do not review the burgeoning literatures on substance abuse prevention or the treatment of antisocial behavior in the mental health system. Moreover, the requirements of space make it inevitable that the specifics of program operations and research designs of many of the projects can only be touched upon. In short, we have tried to provide a broad critical picture, not an exhaustive compendium.

It should also be mentioned in the way of preview that we have avoided entering directly the debate about the validity of the widespread belief that "nothing works" (Martinson, 1974; Wright & Dixon, 1977; Basta & Davidson, 1988; Garrett, 1985; Greenwood & Zimring, 1985; Van Voorhis, 1987; Wilson, 1987). For our purposes here, such a focus seemed counterproductive. Our mission was to draw conclusions about what aspects of programs appeared to contribute to success and how efforts at prevention and treatment might be most usefully implemented. Such conclusions can only be reached by weaving together common strands from the available literature rather than by evaluating program reports of effectiveness "whole cloth."

The presentation is organized around the ideas of primary prevention, secondary prevention, and treatment, a typology borrowed from the field of public health. Although often stretched, this approach nonetheless offers a reasonable mechanism for clarifying the possibilities and problems connected with intervening with different target groups and at different times in the progress of a youth's "career" of juvenile crime. It is not meant to imply that delinquency is an "illness" with a clear etiology and sequelae. Indeed, we strongly conclude that developmental and social context is of critical importance in understanding and responding to delinquency. The use of this structure is simply a way of systematically classifying a vast array of programs.

We begin with a brief review of the major methodological issues inherent in evaluating the effectiveness of various interventions and critical factors that are associated with juvenile delinquency. Then, separate sections examine relevant issues, prominent approaches, and evidence of effectiveness of broad prevention strategies (primary prevention), targeted interventions (secondary prevention), and efforts to deal with a demonstrated problem (treatment strategies). In the final section, we summarize the implications of these reviews for future research, intervention, and policy.

Methodological Issues

Making sense of the literature on delinquency prevention and treatment rests initially on understanding what has actually been asked in this area. As in many other areas of social science, the initial frame put on the problem and the measures chosen to operationalize key concepts set the stage for what conclusions can eventually be drawn (Caplan & Nelson, 1973; Seidman & Rappaport, 1986). Regarding delinquency prevention and treatment in particular, it is clear that the range of definitions of delinquency chosen and the predominant focus on finding a singular, effective approach to intervention has greatly restricted the usefulness of much of the research information generated.

The Problem of Different Definitions

In general, delinquency can be defined in either legal terms (i.e., arrest and adjudication) or in behavioral terms (i.e., stealing, assault, murder). Official records of arrests or court contacts are the sources for legal definitions, and are the most widely reported figures. Self reports of illegal behavior and/or victimization are the most common sources for behaviorally-based definitions. The advantages and disadvantages of these different ways of characterizing delinquency are covered in detail in other chapters of this report. At this point, it should merely suffice to say that discrepancies among official records and the forms of behavioral measurement, particularly with regard to overall prevalence and demographic correlates of delinquency, have caused the validity and reliability of each approach to be questioned (Byrne & Sampson, 1986; Elliott & Ageton, 1980; Elliott, Dunford, & Huizinga, 1987; Farrington, 1987; Hindelang, Hirschi, & Weis, 1979; Rutter & Giller, 1984).

In assessing the state of prevention and treatment programming, the definition of delinquency chosen is critical to consider. What definition is chosen determines what type of youths are studied and thus sets the limits of what can and should be expected of any intervention. Particular program approaches might have effects with "delinquents" defined one way and yet show only a limited effect with "delinquents" defined another way because of the prevalence of covarying factors (e.g., the presence of learning disabilities, Dunivant, 1984) found in the different samples. The fact that particular aspects of a youth's capacities, experiences, or attitudes vary systematically with different definitions of delinquency thus makes comparisons of program effects across studies tenuous.

The definition of delinquency chosen is also critical because what is seen as "success" for a program is dependent on what measure of post-intervention delinquency is used. Given the different sensitivities of legal and self-report measures, it is easy to see how interpretation of program effects can be effected by the operational definition of delinquency chosen. The problem is confounded when one considers that programs could also conceivably have differential effects, with arrests, mediating variables that are the immediate targets of the intervention (e.g., self esteem), and the reported level of antisocial behavior all changing to different degrees.

Unfortunately, many evaluations of delinquency programs use recidivism as the primary or sole outcome measure. Yet, frequently these evaluations do not even specify whether recidivism means rearrest, readjudication, or reincarceration, each of which is a distinctly different outcome (Reppucci & Clingempeel, 1978). Also, the extent to which recidivism reflects changes in individuals' behaviors or in system responses is difficult, if not impossible, to assess (Lerman, 1975).

The Problem of Limited Description

The focus of most program evaluations in delinquency prevention and treatment has been on testing the relationship between a program's avowed approach and outcome. In general, the field has developed assuming that programs falling under the same general rubric (e.g., group homes) are all providing the same type of service to a uniform degree to the adolescents involved. Finding out whether these particular approaches actually "worked" has been the primary task undertaken by a vast proportion of researchers in this area.

Unfortunately, this focus has promoted a lack of specification of the theoretical bases or mediating processes that tie specific strategies to expected decreases in delinquent behavior (Byrne & Sampson, 1986; Elliott, 1980). The first steps in the design of any intervention should be to specify the linkages between program activities, program objectives, and expected outcomes in such a way that assessments at each level will contribute to an understanding of the processes of change and the utility of the theory (Hawkins & Nederhood, 1987). In reality, though, this has rarely been done (Elliott, 1980). Despite the fact that the processes that affect the implementation or strength of an intervention may have greater influence on the program's effectiveness than the program's overall intervention strategy per se (Hackler, 1987; Sechrest & Rosenblatt, 1987), there is rarely a systematic documentation or investigation of these factors in evaluation reports. Therefore, it is usually impossible to tell whether or not a strategy failed because it was implemented poorly, its impact was limited by mediating processes, or the underlying theoretical assumptions were wrong. The development of methods for measuring the interaction of individuals and programs and greater emphasis on evaluating the independent variable (i.e., program implementation) is sorely needed (Seidman, in press; Mulvey, Linney & Rosenberg, 1987).

Critical Factors Related to Juvenile Delinquency

Despite the methodological problems apparent in much of the evaluation literature, research during the past three decades has significantly increased our understanding of factors related to the development of antisocial behavior. In particular, several longitudinal studies of youth changed common conceptions of delinquency; depicting much delinquent activity as an almost unavoidable phase of adolescence (Elliott, Huizinga, & Ageton, 1985; Gold & Petronio, 1980; West & Farrington, 1973; Wolfgang, Figlio, & Sellin, 1972), and finding a striking stability of maladaptive behavior (most notably aggression) in a subsample of antisocial boys (Olweus, 1979). These studies have also emphasized the importance of viewing adolescent antisocial activity as a constellation of behaviors that are engaged in by youth rather than as singular acts of criminal activity (Jessor & Jessor, 1977; Bachman, O'Malley & Johnston, 1978; West & Farrington, 1977). This latter observation has even prompted pointed criticism of the basic assumptions underpinning much of extant delinquency theory by some commentators (Hirschi & Gottfredson, 1988).

Two rather consistent findings from these investigations deserve mention. First, it seems that there is little specialization of offending exhibited by delinquents (Wolfgang et al., 1972; Klein, 1984; Rojek & Erickson, 1982). Delinquents appear rather versatile in their choice of antisocial acts. Second, a large amount of delinquency is committed by a small number of youths. These studies revealed that about 6% of youths were responsible for over fifty percent of juvenile arrests. Many researchers and program planners are now looking at the processes that appear to increase or decrease risk for chronic delinquent and criminal behavior in the hopes of finding solutions that will reduce crime rates (Blumstein & Cohen, 1987;

Blumstein, Cohen, Roth, & Visher,1986; Farrington, 1987; Greenwood, 1982). Investigators must now a) translate the necessarily more powerful retrospective findings of longitudinal studies into predictive strategies applicable to public policy and b) assess the likely systemic impact of the use of any predictive strategies developed. These studies of risk and protective factors and age trends in the onset and desistance from delinquent behavior are also important to consider in the assessment of prevention and treatment strategies.

The information gleaned from these investigations provides leads about both the risk factors and the types of interventions that might be most appropriate to consider at different stages of a youth's development. As Bell (1986) points out, many indicators of risk are dependent on the developmental status of the youth; particular behaviors or life situations indicate higher or lower risk depending on when they occur during a youth's development. Lying, for instance, can be seen as a developmental stage for a younger child but more of an indicator of risk in an older child. Adopting this perspective, it is easy to see that a child may move in and out of risk classification many times as he or she matures and/or moves in and out of different situational contexts. Thus, in assessing a child's current risk status (and thus appropriateness for involvement in a preventive intervention) it is necessary to think about both underlying, persistent indications of risk bases (sex, SES, IQ) and "age-specific manifestations of risk" (behavior problems). Decisions of how to approach prevention of delinquency should be based on an assessment of temporary versus ongoing risk factors.

The second value of this line of research for efforts at prevention and intervention is its potential for providing information about program strategies that might be most appropriate for youths identified at different ages or stages in their "careers" of antisocial behavior. Interventions should not be expected to be equally effective across all stages of a youth's development, and particular approaches might be more appropriate to the type of antisocial activity engaged in by youth of a particular age. As an obvious example, family approaches might be expected to have better outcomes with younger youths more under family control than with older youths more inclined to engage in group related delinquencies (Farrington, 1986; Knight & West, 1975; Osborn & West, 1980; West & Farrington, 1977). Studies of cessation of delinquency can also provide information about processes that might be worthwhile to promote in prevention or treatment programs (Mulvey, 1988; Jenkins & Brown, 1988; Brown & Gable, 1979).

Primary Prevention Of Delinquency

Issues in Primary Prevention

Primary prevention of delinquency rests on the principle of identifying individuals or environments at risk for delinquent activity before the behavior has occurred, and intervening to reduce the eventual amount of delinquent behavior that happens in that group or setting. Prevention strategies of this sort are generally broadly based efforts to provide skills to groups considered at risk because of their general life situation (e.g., low income, stressed families) or efforts to change environments that promote delinquency (e.g., school settings). Such an approach requires that the target group or setting identified is both powerfully linked to the development of delinquency and receptive to the approach taken (Lorion, 1983; Cowen, 1982; Heller & Monahan, 1977). The eventual efficacy of primary prevention also rests on the practical limitations of particular strategies of intervention and the ethical or policy constraints of focusing on particular groups or social institutions.

Family-based Preventive Interventions

Given recent empirical evidence relating family functioning to various forms of adolescent antisocial behavior (e.g., Gove & Crutchfield, 1982; Patterson, 1982) and alarm at the rapidly changing demographics of American families (Cherlin, 1981; Loury, 1987), early intervention with families has received wide endorsement as a locus for preventive intervention (Bryce, 1988; Bank, Patterson, & Reid, 1987; Hawkins, Catalano, Jones, & Fine, 1987; Loeber, 1987; Loeber & Stouthamer-Loeber, 1986; Snyder & Patterson, 1987). Despite potential problems of privacy invasion or labeling (Broskowski & Baker, 1974; Lorion, 1987; McCord, 1978), programs aimed at altering parenting styles or family dynamics have an inherent appeal as a place to start for preventing delinquency. Efforts of this type have generally taken one of two foci; either providing training for parents in family management techniques or providing supportive services such as child care and/or medical and social services to socially disadvantaged families.

Parent Training. Parent training interventions developed during the 1960's when behaviorally-oriented child therapists recognized the importance of involving parents in child behavior management in the home (Hawkins, Peterson, Schweid, & Bijou, 1966; Patterson, McNeal, Hawkins, & Phelps, 1967; Wahler, 1969), and efforts were made to teach these skills to lower class families (Wittes & Radin, 1971). The findings of interventions using parent training as a primary prevention strategy since that time, however, have only provided limited support for the efficacy of this approach. Several studies have demonstrated that parent training can change parenting behavior and reduce problem behaviors of targeted conduct disordered youths (Alexander & Parsons, 1973; Kazdin, Esveldt-Dawson, French, & Unis, 1987; Loeber & Stouthamer-Loeber, 1986; Patterson, Chamberlain, & Reid, 1982; Wolfe, 1987). The only evidence of a rippling, preventive effect of such training, however, comes from a small number of reports that the siblings of targeted youths were also found to be less likely to exhibit problem behaviors (Arnold, Levine, & Patterson, 1975) and delinquency (Klein, Alexander, & Parsons, 1977) following intervention than siblings of comparison youth.

Other interventions have reported on the use of parent training as a component of a prevention package offered to parents and children. Johnson & Breckenridge (1982), for example, offered an intensive, 2-year parent-child education program for low-income Mexican-Americans with children ages 1 to 3, providing approximately 500 hours of contact over a two year period, and using home visits and center activities to teach the parents child development and parenting skills. Hawkins, Catalano, Jones, & Fine (1987) also reported the use of parenting classes in a carefully assessed delinquency prevention project based in eight, inner-city Seattle schools. In both projects, there were positive attitudinal and behavioral outcomes for the parents and children documented, and the Seattle project also reported that randomly targeted children were less likely to have started drug use or delinquent activity by the fifth grade (Hawkins & Catalano, 1989). With both of these programs, though, it is impossible to separate the effects of parent training from the other aspects of the intervention.

Perhaps the most consistent finding across the parent training literature is the difficulty of keeping families with the greatest need engaged in the program on a regular basis. In the Johnson and Breckenridge (1982) program above, for instance, 48% of the treatment group and 38% of the control group dropped out during the 2-years of involvement. Wahler and Dumas have also demonstrated that multi-stressed parents are more likely to have parenting difficulties and are less likely to complete training programs and/or continue to apply the skills they have learned after completion of the program (Dumas & Wahler, 1983, 1985; Wahler & Dumas, 1987). Clearly, methods for recruiting high risk parents and maintaining their use of the skills learned in the classes must be found, and there is little evidence that parenting skill training by itself can be applied as an effective primary prevention strategy.

Family Support. Another type of preventive intervention with disadvantaged parents involves provision of a broad array of social support services, including day care, medical care, counseling, family needs assessment, and referrals to other social service agencies. Although an oft-cited example of this type of casework approach, the Cambridge-Somerville Youth Study, apparently had negative long term effects on some participants (McCord, 1978), more recent interventions have shown evidence of positive impact (Benasich & Clewell, 1989; Horacek, et al., 1987; Rauh et al, 1988; Seitz, Apfel, & Rosenbaum, 1989). While the impact of day care, particularly on infants, is currently being debated (eg., Belsky, 1988; Clarke-Stewart, 1988, 1989; Phillips, McCartney, Scarr, & Howes, 1987), there is general agreement that quality day care is beneficial to disadvantaged families (McCartney, Scarr, Phillips, & Grajek, 1985; Ramey, Dorval, & Baker-Ward, 1983). Few studies, however, have examined the long term effects of day care and other family support interventions on later delinquency and antisocial behavior.

A notable exception is the Yale Child Welfare Research Program (Seitz et al., 1985, 1989), an intervention that provided a coordinated set of social work, pediatric, child care, and psychological services for 30 months following birth to low income mothers and their first born children. Evaluation of the program immediately following intervention and five and ten-year followups indicated that the program had positive impact on both the parents and children involved, compared to a matched comparison group (Seitz et al., 1985, 1989; Trickett, Apfel, Rosenbaum, & Zigler, 1982). Ten years following the end of intervention, boys involved in the program were less likely to be rated negatively in terms of their behavior by their teachers, to be in need of special education services, or to be truant than members of the comparison group (Seitz et al., 1985, 1989). Thus, at age 12.5, program boys were less likely to exhibit predelinquent behavior problems than comparison boys. Considerable caution is needed in interpreting these long-term results as being generalizable, however, because most of them were based on comparisons of only 15 matched experimental and control low income families, none of whom were suffering from serious health or emotional problems.

School-based Preventive Interventions

The second major social system that historically has been charged with responsibility for socializing youth is the school. A large body of research has shown that low IQ, learning disability, poor attitudes toward school, and school failure are related to and often precede official and self reports of delinquent behavior (Elliott, Huizinga, & Ageton, 1985; Hawkins & Lishner, 1987; Hirschi, 1969). While schools traditionally have provided a number of individual-focused prevention services such as free lunches, health screening, counseling, and remedial and special education, system-level preventive interventions have only recently been tried (Farrington, Ohlin, & Wilson, 1986; Meyers & Parsons, 1987). These interventions have been bolstered by research showing that school processes and climate are related to academic achievement and rates of delinquent behavior by students (Fiqueira-McDonough, 1986; Rutter, 1983). School-based delinquency prevention interventions can be classified as preschool programs, cognitive-behavioral training programs, and process-oriented interventions.

Preschool Programs. The best known school-based preventive intervention undoubtedly is Project Head Start (Zigler & Valentine,1979). Evaluations of Head Start programs' impact on participants have been mixed (Gamble & Zigler, 1989; Haskins,1989; McKey et al., 1985; White, 1985-1986) and reflect the variation in quality of Head Start programs and in outcome measures used in the evaluations (Gamble & Zigler, 1989; Parker, Piotrkowski, & Peay, 1987). However, on balance the evidence suggests that many Head Start programs produce short-lived improvements in children's IQ and academic performance and long-term improvements in school functioning, including less need for special education placement, less likelihood of grade retention, and greater likelihood of graduation (Haskins, 1989; Zigler & Hall, 1987). Additional benefits to communities and mothers of Head Start children have only recently begun to be assessed (Lee, Liaw, & Schnur, 1989; Sullivan & Miller, 1989). Longitudinal studies of similar preschool programs have produced even more striking results (e.g., Horacek et al., 1987; Lazar & Darlington et. al, 1982; Consortium for Longitudinal Studies, 1983). Followup evaluations that shed light on the effects of Head Start on preventing delinquency, however, are sparse.

In one of the exceptions to this state of affairs, longitudinal data from the Perry Preschool Project does include evidence of reductions in delinquency, teen pregnancy, and crime (Berrueta-Clement et al., 1984; Berrueta-Clement, Schweinhart, Barnett, & Weikart, 1987; Schweinhart, 1987). Fifty-eight 3 to 4 year-olds who were program participants were given matched controls and followed up through age nineteen. Data were collected regarding academic achievement, graduation from high school, post secondary education, employment at age 19, welfare at age 19, teenage pregnancy, juvenile delinquency, and adult criminality (Berrueta-Clement et al., 1984; Berrueta-Clement, Schweinhart, Barnett, & Weikart, 1987; Schweinhart, 1987). Compared to the control group, program participants were less likely to have been arrested at all, had five or more arrests, had special education placements in school, dropped out of high school, or been on welfare. Participants had lower rates of teenage pregnancy and adult arrests, and higher rates of adult employment and postsecondary enrollment. These long term outcomes were related to primary school teacher ratings of classroom conduct and personal behavior, suggesting that the initial behavioral improvements due to participation had sustained impact on the lives of these young people (Farnsworth, Schweinhart, & Berrueta-Clement, 1985; Schweinhart, 1987).

Surprisingly, the program appeared to have greater impact on adult arrests than on juvenile arrests.

Cognitive-Behavioral Programs. Cognitive-behavioral interventions are based on the idea that conduct disorders such as juvenile delinquency and substance abuse can result from an inability to develop and maintain positive social relationships due to deficits in social skills (Caplan, & Weissberg, in press; Michelson, 1987; Spivack, Marcus,& Swift, 1986). These interventions can be described as either interpersonal cognitive problem solving (ICPS) programs, or behavioral social skills training (BSST) programs. ICPS programs focus on processes such as interpreting social cues and other's intentions, generating alternative solutions to social problem situations, evaluating the likely outcomes of different solutions, and means-ends thinking (Shure & Spivack, 1988). BSST programs focus on teaching specific behaviors such as entering a peer group, accepting criticism, giving compliments, and resisting peer pressure (Michelson, 1987). Many programs incorporate aspects of both ICPS and BSST (Battistich et al., 1989; Caplan & Weissberg, in press; Michelson, 1987). These are generally presented as a part of a school curriculum and done in small groups of students.

Evaluations of cognitive-behavioral skills training programs have shown consistent, short-term improvements in problem solving abilities (eg, Durlak, 1983; Gresham, 1985; Shure & Spivack, 1982, 1988; Weissberg, Caplan, & Shivo, 1989), particularly for younger, disadvantaged children. Evidence for behavioral improvements exists (Battistich et al., 1989; Rotheram-Borus, 1988; Shure & Spivack, 1982, 1988), but the evidence for long term behavioral improvements is not clear (Durlak, 1983; Gresham, 1985; Michelson, 1987). Although evaluations of several controlled studies of programs focused specifically on skills to resist pressure to use drugs and alcohol have produced promising results (Botvin et al,. 1984; Weissberg & Caplan, 1989; Englander-Golden, Elconin, Miller, & Schwarzkopf, 1986), some methodological limitations, especially self-selection in some programs, limit the conclusions that can be drawn.

An interesting approach incorporating many of the techniques used in cognitive-behavioral strategies has been mounted in Massachusetts, with its aim being to change adolescents' attitudes toward the use of violence (Prothrow-Stith, 1985). Using a standard curriculum of information provision and role-playing in Boston area high schools, this program specifically addresses the issue of anger and violence control. While attractive for its focus and direction, there do not appear to be any evaluations of its overall effectiveness.

Social Process Interventions. Part of the problem with evaluating cognitive-behavioral interventions lies in the failure to assess the environmental mediators between increases in problem-solving skills and application of those skills in real-life situations (Kelly, 1987; Trickett, 1984; Weissberg, Caplan, & Sivo, 1989). The responses of teachers, peers, and family members appear to influence the use of problem-solving skills, not to mention the particular social/developmental tasks confronting an individual and their beliefs about appropriate responses (Caplan & Weissberg, in press; McFall, 1982; Parkhurst & Asher, 1985). In recognition of the importance of these factors, some researchers have designed interventions to alter the social structures and processes of schools to facilitate better adjustment among students (Bry, 1982; Cauce, Comer, & Schwartz, 1987; Felner & Adan, 1988; Gottfredson, 1986; Hawkins & Lam, 1987). Though some of these interventions incorporate social skills training, their major focus is to change the school social environment to encourage greater involvement and commitment among students.

One type of system-level intervention focuses on changing teacher practices within the classroom to increase the bonding of low achievers. In an ambitious and well documented project, Hawkins and his colleagues trained 15 seventh-grade teachers of 54 experimental classes in inner city schools to apply proactive classroom management, interactive teaching, and cooperative learning strategies (Hawkins, Doueck, & Lishner, 1988; Hawkins & Lishner, 1987). Evaluation of program implementation, students' perceptions of and attitudes toward school, academic performance, school behavior,and self reports of delinquent behavior in school were done. Generally positive results regarding teacher behavior and the relationship of the adolescents to the school environment were found after one year. Although self-reports of school delinquency did not differ between students in the experimental and control classes, students in experimental classes had fewer disciplinary actions and days suspended, and reported less frequent drug use at school (Hawkins, Doueck, & Lishner, 1988, Hawkins & Lishner, 1987). Evidence that changes in teacher and classroom procedures can reduce disruptive behavior, increase academic involvement and achievement, or reduce unwanted outcomes like teen pregnancy or dropout has come from other sources as well (Brophy, 1986; Bry, 1982; Weissberg, Cowen, Lotyczewski, & Gesten, 1983; Felner & Adan, 1988; Felner, Ginter, & Primavera, 1982; U.S. Department of Justice, 1988; Hawkins & Lam, 1987; Cauce, Comer, & Schwartz, 1987; Gottfredson, 1986). Unfortunately, very few studies (e.g., Bowman, 1959) have demonstrated that such interventions can have a positive effect on subsequent achievement and delinquency, and previously well evaluated efforts to provide alternative classes (e.g., Reckless & Dinitz, 1972) showed no effect.

Community-based Preventive Interventions

Community Organization. Shaw and McKay (1969) recognized during the 1920's and 1930's that most juvenile delinquents in Chicago lived in low SES, inner-city neighborhoods characterized by rapid residential transition, high unemployment, and a lack of citizen involvement. They developed the Chicago Area Project to prevent delinquency by organizing neighborhood residents to provide greater structure, supervision, and opportunities for positive involvement of youth. Despite evidence that delinquency rates in the Project neighborhoods declined by almost 50% during the 1930's, the Project was never systematically evaluated and its effectiveness at preventing delinquency remains in doubt (Bursik & Webb, 1982; Schlossman & Sedlak, 1983; Siegel & Senna, 1988). However, the Project was successful at organizing community residents, and continues to support neighborhood groups in South Chicago to this day (Schlossman et al., 1984). Recent studies based on Shaw & McKay's pioneering work continue to provide evidence that community disorganization is related to higher crime rates (Byrne & Sampson, 1986; Simcha-Fagan & Schwartz, 1986; Skogan, 1989).

Current interventions that focus on increasing community involvement to prevent crime generally are limited to developing Neighborhood or Block Watch organizations, or citizen patrols such as the Guardian Angels (Bennett & Lavrakas, 1989; Garofalo & McLeod, 1989; Pennell, Curtis, Henderson, & Tayman, 1989; Rosenbaum, 1987). While such programs have been shown to reduce crime and fear of crime (Bennett & Lavrakas, 1989; Pennell et al., 1989), other studies have shown that it is hardest to organize these programs in high crime neighborhoods and that in some instances, fear may increase (Rosenbaum, 1987; Skogan, 1988, 1989). Moreover, some studies suggest that neighborhood organizing has little direct effect on delinquency when compared with family, school, and peer influences (Fagan, Piper, & Moore, 1986; Simcha-Fagan & Schwartz,1986). Part of the reason that there is no clear effect for these interventions may lie in the presently primitive state of measurement connected with assessing variables at a community level, and the difficulty of teasing out the many interactions between community, family, and individual level changes. Nonetheless, there is presently little evidence that these efforts alone will have a significant impact on juvenile crime.

More targeted community-based programs aimed at providing a comprehensive, caring environment for adolescence have also been established and enjoy some positive regard by practitioners. These programs (e.g., Argus Community in the South Bronx, Delancy Street in San Francisco, or House of Umoja in West Philadelphia) all operate from the premise that adolescents experiencing trouble need a supportive place to go to find help with a variety of problems. Therefore, they offer multiple services for multiple problems, attempting to be responsive to the particular life situation of the individual youth who comes to them for help. Evaluations have been sparse (Milton S. Eisenhower Foundation, no date) although there is an inherent attractiveness to the notion of creating an accessible, nurturant, and flexible environment for youths who are least likely to connect with conventional professional services. It is clear that, given the longstanding relationship between community structure and delinquency rates, that more research is needed to clarify the role that community organization plays in the promotion and maintenance of delinquency.

Youth Recreation. Numerous youth recreation programs such as the Police Athletic League, Boy's Clubs, and the Fresh Air Fund have developed over the years to provide constructive activities for youth and reduce their involvement in antisocial activity (Berryman, 1978). A few studies have shown a relationship between participation in organized athletic programs and lower levels of delinquent activity, particularly for working class boys (Schafer, 1969; Segrave & Chu, 1978). Currently, more than 20 million youth aged 6-15 participate in some form of organized, extrascholastic sports activity (Magill, Ash, & Small, 1978), prompting some researchers to suggest that organized sports may have tremendous potential for promoting competence and preventing delinquency (Burchard, 1979; Danish, 1983; Reppucci, 1987). Unfortunately, this potential has never been systematically assessed.

Similarly, recent studies indicating that children and adolescents spend more than 20 hours per week watching TV has increased concern about the impact of TV violence on behavior (Anderson et al., 1986). Moreover, studies have typically shown moderate correlations between the amount of violence seen on TV and aggressive behavior (Friedrich-Cofer & Huston, 1986), with some evidence that the effect of viewing televised violence as a young child may have a relationship to delinquency in adolescence (Pearl, Bouthilet & Lazar, 1982). Given this possibility of the media as an influential and untapped resource on adolescent attitudes, commercials designed to discourage drug use and encourage parent involvement with their children have recently been developed. However, their impact on substance use and/or delinquent behavior has not been assessed systematically. It should be recognized, however, that sorting out the effect of media exposure is a complex task, since this variable is usually one that has subtle interactions with predisposition and attitudes in its relationship to any behavioral outcome of interest (Mulvey & Haugaard, 1986).

Summary of Primary Prevention

Recent research has provided some encouraging evidence that primary prevention programs may hold potential for reducing juvenile delinquency, but the demonstration of the links between these efforts and an actual reduction in delinquent behavior in the groups of most interest is still a tenuous one. For example, some family intervention programs may have longlasting effects or reduce delinquency (Johnson & Walker, 1987; Klein, Alexander, & Parsons, 1977), but these interventions appear to be less successful with high risk, multiproblem families and families of older children (Johnson & Breckenridge, 1982; Walher & Dumas, 1987). For lower SES and minority families, some family support and structured preschool interventions were able to reduce the risk of delinquency many years following intervention (Berrueta-Clement et al., 1984; Seitz et al., 1989), but the problems of keeping the families most at risk in the program are considerable. School programs that change teacher behavior and/or school organization seem able to improve the school behavior and performance of low achievers (Bry, 1982; Felner & Adan, 1988; Hawkins & Catalano, 1989; Hawkins, Doueck, & Lishner, 1988), as do social skills and cognitive problem-solving interventions (Battistich et al., 1989; Shure & Spivack, 1982), but the long term impact of these programs on delinquency has not been established. Although promising, community approaches to delinquency prevention are difficult to evaluate and have not been adequately tested.

Only two programs, meanwhile, have provided evidence of their cost effectiveness. In particular, the Perry Preschool Project produced compelling evidence that the program resulted in approximately $28,000 in benefits to taxpayers against a yearly cost of about $5000 per child (Schweinhart, 1987). Their analysis was thorough, including a broad range of calculated benefits and costs and discounting for the time difference between costs and long-term benefits (Barnett & Escobar, 1987; Berrueta-Clement et al., 1984). The Yale Child Welfare Program also cited evidence for approximately $40,000 in benefits per year after a total program cost per child of $20,000 (Seitz et al., 1985), but their analysis was not comprehensive enough to represent a complete picture of the cost-benefit ratio (Barnett & Escobar, 1987). Unfortunately, other programs have not evaluated costs versus benefits.

Secondary Prevention of Delinquency

Secondary prevention refers to programs that attempt to rehabilitate youth who have shown early indications of behavior problems, but have not yet been formally classified as delinquent or who have not exhibited a longstanding pattern of antisocial behavior. In many cases, secondary prevention programs are targeted at youth who have had one or two contacts with the police, but have not yet been adjudicated by the juvenile court. Instead of being concerned with the early predictors of risk for later delinquency, these programs frequently depend on an understanding of factors that differentiate between children who exhibit temporary behavior problems and those who are likely to persist in antisocial behavior.

Diversion

One approach to secondary prevention that has been advocated periodically is that of simply diverting youths from the juvenile justice system, and shifting the responsibility for handling these youths to other social control institutions (e.g., the family, schools) or community-based services. The goal is to reduce the number of adolescents processed into the juvenile justice system by limiting the number passed on at each stage of processing (i.e., arrest, intake, petitioning to court). This is done by establishing a) restrictive procedures for moving a case along to the next level of involvement (e.g., those promoted by the Juvenile Justice and Delinquency Prevention Act of 1974 not allowing status offenses into court) and/or b) attractive options for referral at each of the stages of processing (e.g., alternative family based services accessible at the point of court intake).

A two-pronged logic underpins this approach. First is the belief that the involvement of juvenile justice can often be as or more harmful than helpful because much of what it handles is transitory adolescent behavior (Matza, 1964), and juvenile justice processing often makes an adolescent more likely to adopt a view of him/herself as a "bad" youth for whom deviant behavior is to be expected. Second is the belief that agencies based closer to the everyday life of the adolescent will be more effective in addressing whatever problems might be producing delinquent behavior, and in some cases, no intervention may be the most effective way to prevent a continuation of behavior problems (Schur, 1973).

Unfortunately, despite recent declines in the number of youth arrested and substantial increases in the number of community diversion programs there has been an increase in the number of youth residing in public and private institutions (Curran, 1988; FBI,1989). This fact, in conjunction with empirical demonstrations of the ability of professionals to adapt to statutory changes (e.g., Mulvey & Hicks, 1982; Handler & Zatz, 1982) and the fact that long term systems involvement appears to accompany diversion (Frazier & Cochran, 1986), has lent support to the contention that diversion practices have actually "widened the net" of social control in juvenile justice. Youth who previously would have been warned and released were now being diverted into community programs, paradoxically expanding rather than reducing the number of juveniles handled by the system (Austin & Krisberg, 1981; Blomberg, 1980; Pratt, 1986).

This is not to say, however, that successful diversion programs are nonexistent (Binder & Geis, 1984). Drawing on some previously reported successful programs (e.g., Binder, Monahan & Newkirk, 1976; Baron, Feeney & Thornton, 1973), Davidson and his colleagues (Davidson et al., 1977; Davidson et al., 1987; Davidson & Redner, 1988) in a series of carefully designed and implemented studies of a diversion project have consistently shown the effectiveness of an 18 week intervention by paraprofessionals using behavioral contracting and advocacy strategies for reducing rearrest rates for up to two years following program involvement (Davidson & Redner, 1988; Mitchell, 1983). Another study of diversion programs in Colorado found significant decreases in recidivism rates among project youth using a measure of recidivism adjusted for prior penetration into the justice system (Regoli, Wilderman, & Pogrebin, 1985). Thus, at least in some cases, diversion may be an effective alternative to formal adjudication if the problems of implementation can be overcome (Osgood & Weichselbaum, 1984).

This last point, however, is not an inconsequential one. Overall, the effects of diversion projects as implemented have been unimpressive in making the leap between demonstration and practice. Evaluations of programs nationwide have indicated that diversion programs had little effect on subsequent arrest rates (Klein, 1974; Severy & Whitaker, 1982). Thus, although effects can be shown, there is little reason to believe that the practice of diversion has met with any marked success.

Another successful intervention (Feldman, Caplinger & Wodarski, 1983), although technically not a diversion project, does deserve mention here because it provides information about some dimensions of programming in this area that might be worth considering in trying to design programs with greater success of having a real world impact. Working with identified and treated antisocial youths before they progressed into the juvenile justice system, this group oriented, community-based program in St. Louis took referrals from schools and the juvenile court and ran activity groups that mixed referred antisocial youths with nonreferred, nonproblem youths. Using an impressive multi-factorial design, these researchers showed an effect of reduced self reported and official delinquency in targeted youths who participated in groups with higher numbers of nonreferred youths run by experienced group leaders. Although the number of youths in each condition was smaller than might be desired, the soundness of the design and concurrent evidence of positive modeling effects from other investigations (e.g., Sarason, 1978) point toward positive effects that can be gained by integrating antisocial youths into activities with nondisturbed peers.

1116

Alternative and Vocational Education

Based on the consistent finding that adolescents with behavior problems are frequently doing poorly in school, are not engaged by common classroom procedures, and are lacking in job-related skills, many secondary prevention strategies attempt to provide educational and vocational training alternatives to traditional school programs (Grande, 1988; Siegel & Senna, 1988). Although the connection between school dropout and delinquency has been debated (Elliott & Voss, 1974; Thornberry, Moore, & Christenson, 1985), there is a clear consensus that academic failure is common among adjudicated delinquents.

Although there has been a lack of systematic evaluation of the impact of alternative educational programs on delinquency rates (Mesinger,1981), several notable exceptions demonstrate that alternative programs can have a profound impact on the lives of adolescents who have failed in traditional classrooms. Massimo and Shore's (1967; Shore & Massimo, 1966, 1969, 1973) followup studies five and ten years after a comprehensive, vocational and psychotherapeutic intervention with boys who had just been expelled or dropped out of high school indicated that almost all of the randomly selected program adolescents adjusted well in terms of employment, schooling, and legal and marital status, while nearly all of the control youth were still experiencing severe legal, vocational, and personal difficulties. However, the project used a very talented therapist and compared only ten participants with ten control youth, so the generalizability of these findings is limited.

On a broader scale, Gottfredson (1985) cited evidence from evaluations of U.S. Department of Labor work programs and the National Institute of Education's Experience-Based Career Education Program that vocational training can reduce school dropout and increase learning and attendance among high risk adolescents if the work experiences are carefully integrated with classroom experiences, perceived as relevant to the students' interests, and closely monitored. However, the direct impact of these programs on delinquency was not assessed.

In sum, alternative educational programs for behavior disordered and delinquent children and adolescents have shown improvements in these children's classroom and home behavior, academic performance, school attendance, and dropout, but their impact on delinquency generally remains untested, even though Shore and Massimo's work (1969, 1973) indicated that short term improvements can have substantial long term effects. Some programs deserve controlled, long term evaluations of their impact on participants as well as an examination of the strategies that have been used to foster client investment in the program. Questions remain about what types of strategies are most effective at different ages and for different types of academic and behavioral problems, how long the programs should last, and what characteristics of the programs and program staff make them most acceptable to targeted youth.

Family Therapy and Skills Training

Family therapy and skills training has been a popular mode of intervention with conduct disordered children for more than 20 years (Fraser, Hawkins, & Howard, 1988; Tolan, Cromwell, & Brasswell, 1986), and it has been successful at reducing problem behaviors among children of treated families (Alexander & Parsons, 1973; Barton et al., 1985; Kazdin, 1987; Kazdin, Bass, Siegel, & Thomas, 1989; Fraser, Hawkins, & Howard, 1988; Patterson, Chamberlain, & Reid, 1982). More recently, given the positive correlation between childhood behavior problems and adolescent delinquency (Loeber, 1982), family focused interventions with delinquent and drug abusing adolescents have become popular (Gordon & Arbuthnot, 1987; Szapocznik et al.,1988).

Studies of family-based interventions with delinquents have examined characteristics of the intervention, the therapists, the targeted children, and the families in order to determine what strategies work best under different circumstances. Several studies have shown that family systems and behavioral skills approaches cut recidivism rates by about half in comparison to client-centered relationship therapy, psychodynamic therapy, and no treatment comparison groups (Alexander & Parsons, 1973; Gordon & Arbuthnot, 1987) and have greater impact on child and family functioning than other types of therapy (Henggeler et al.,1986; Kazdin et al., 1989; Patterson, Chamberlain, & Reid, 1982).

Since most family interventions have experienced nearly a 50% dropout rate (Hawkins et al., 1987), however, the targeted child's and family's characteristics, as well as methods for making adherence more attractive to families, are all factors that must be investigated further if these initial developments in family approaches are to be expanded. It is clear that dropout families tend to have older children (Fleischman, 1981), to be poorer and more stressed, and to have fewer social supports (Dumas & Wahler, 1983; Webster-Stratton, 1985). Patterson and his colleagues have also been less successful with older, chronic delinquents than younger, aggressive children (Marlowe, Reid, Patterson, & Weinrott, 1986; Reid, 1983).

Summary of Secondary Prevention

Some secondary prevention programs appear to be effective at reducing rates of antisocial behavior and delinquency, but the overall record of strategies for broad scale efforts at this type of intervention are not impressive. Although evaluations of diversion programs have produced widely varying results, some programs with clearly defined and well-implemented interventions incorporating behavioral and family-based change strategies have produced clear reductions in subsequent arrest rates (Davidson & Redner, 1988), though not in self-reported delinquency behavior (Davidson et al., 1987). The effectiveness of diversion programs has been obscured by the inclusion of many status and first time offenders, who may have been better served by a warning and outright release (Roberts, 1988). Because of the real world problems of "net widening" and ensuring program integrity, diversion as a broadly applied strategy for secondary prevention has been largely disappointing.

Some vocationally-oriented, intensive, and broadly based programs have clearly reduced delinquency (Shore & Massimo, 1966, 1973), though most vocational and alternative education programs have only assessed more immediate outcomes such as increased school attendance and reduced dropout rates (Arbuthnot & Gordon, 1986; Gottfredson, 1985; Hawkins & Lishner, 1987). The group project reported by Feldman et al. (1983) provided evidence that careful integration of identified youths with normal peers could be effective in reducing delinquency. Replication of the processes that might have produced these effects certainly seems warranted. Other clear evidence of effectiveness comes from evaluations of behavioral, structural, and multisystemic family therapy (Alexander & Parsons, 1973; Fraser, Hawkins, & Howard, 1988; Gordon & Arbuthnot, 1987; Henggler et al., 1986; Patterson, Chamberlain, & Reid, 1982). The only reservations that might arise about this evidence is that the evaluations have often failed to assess long-term impact on delinquency, and that these strategies are often plagued by high dropout rates (Hawkins, et al., 1987). Finally, these interventions are most effective with pre-teen adolescent males rather than with older antisocial adolescents. Although information about cost-effectiveness is very limited, Lipsey's careful analysis (1984) demonstrated that programs can be cost-effective if they target juveniles with substantial delinquency risk, sustain at least a moderately high level of success in preventing future arrests, and contain treatment costs.

Treatment of Juvenile Delinquents

Once a juvenile has been officially adjudicated delinquent by the court, a broad range of potential dispositions are available; some of which are theoretically grounded efforts to induce psychological change in the adolescent while others are more amorphous amalgams of rehabilitation, retribution, and incapacitation. Because of the philosophy and rhetoric of the court, all of these approaches come under the broad rubric of treatment. In this section, we will review the research concerning the effectiveness of many of the major treatment strategies used after disposition. Although not exclusively, the focus will be on approaches usually only taken with those adolescents for whom the secondary prevention strategies described previously have failed or are deemed inappropriate.

Institutional Approaches

Perhaps the most basic question regarding delinquency treatment is whether a truly effective approach to programming within any institution, public or private, might exist. The literature is replete with examples of "successful" but inadequately evaluated programs. Therefore, most of these reports must be interpreted cautiously.

Before an examination of different treatment modalities is made, however, it would be useful to at least make mention of the movement in many locales toward the establishment of more punitive environments in juvenile institutions. Many states have proposals or programs for "boot camps" or other types of programs to make the time spent in an institution an unpleasant, but potentially discipline-inducing, experience. Evidence for the effectiveness of such programs appears to still be anecdotal, and a clear assessment of their relative value does not seem possible at this time.

Certainly some theorists have argued that formal adjudication of juveniles has a suppressant effect on further illegal behavior due to the threat of further punishment (Murray & Cox, 1979), even though the threat of being caught and punished is perceived as slight by most delinquents and criminals (Siegel & Senna, 1988) and interventions to date based on deterrence have shown negligible impact on future offending (Lewis, 1983; Locke et al., 1986). These contradictory positions continue to influence arguments for and against stricter sanctioning for juvenile offenders (Ohlin, 1983; Regnery, 1986; Sarri, 1981; Schur, 1973), and will probably continue to do so until cleaner evaluations of these approaches have been done.

It is also worth prefacing this section of the review with the recognition that the ideal situation for treatment would be one in which the approach taken was matched to the particular characteristics of the youth or family, since treatment effectiveness is obviously the result of an interaction between offender characteristics and treatment types. This level of sophistication is still largely a distant ideal in this area, however. Most evaluations of treatment effectiveness treat juvenile offenders as a single, homogenous category (Arbuthnot, Gordon, & Jurkovic, 1987; Palmer, 1984; Romig, 1978). Similarly, treatments of delinquents are rarely examined in terms of multidimensional "types". Instead, programs that go by the same general name (e.g., group home) are usually assumed (often incorrectly) to provide the same type of service (Linney, 1982; Coates, 1981). Although several promising attempts to differentiate types of delinquents (Quay, 1987a; Quay & Peterson, 1983; Achenbach & Edilbrock, 1983; Palmer, 1974) and dimensions of programs exist, only a few studies (e.g., Jessness, 1971) have made any systematic attempt to relate types to treatments in terms of effectiveness and these have been methodologically flawed.

Regarding more standard approaches, the weight of the evidence is not encouraging that a valid technology of treatment for institutional care has yet been developed. One of the most highly touted and carefully investigated programs was the CASE (Contingencies Applicable to Special Education) II project (Cohen & Filipczak, 1971) conducted at the National Training School (NIS) in Washington, D.C. This program used a behaviorally based token economy system for the 41 juvenile offenders, all school failures, were rewarded for academic competence with points redeemable for money and desirable goods. The results indicated an average increase of two grade levels after involvement for at least 90 days and a recidivism rate two-thirds less than a similar normative group processed by NIS. These differences disappeared, however, by the end of the third year, indicating the need for long-term followup to ensure success.

A second, and highly popular form of intervention in institutions, has been Positive Peer Culture, or Guided Group Interaction (PPC/GGI) programs. This type of peer group counseling gained prominence as an approach following the well publicized programs at Highfields, Essexfields, Provo, and Silverlake (Gottfredson,1987). Despite early claims of success for PPC/GGI at Highfields (Weeks, 1958), a re-examination of the data by Gottfredson (1987) indicated that, because of background differences between program and comparison youth, no conclusive evidence exists that Highfields was successful at reducing recidivism, though the data were promising. Similar results were reported for the Essexfields replication of the Highfields project. Data from the Provo Experiment, applying PPC/GGI techniques to a community-based, nonresidential program indicated that the program lowered arrest rates of program youth compared to comparison probationers during the program, and compared to institutionalized comparison youth after the program (Empey & Erickson, 1972). The Silverlake Experiment (Empey & Lubeck, 1971) did not have any conclusive impact on rearrest rates.

A more recent and detailed evaluation of a similar, but probably more intensive program, Paint Creek Youth Center, does not offer results that are markedly different. This program combined positive peer culture, a point-level system, individual, group and family therapy, classroom and vocational education, family support groups, drug and alcohol programs, skills training, and community aftercare (U.S. Department of Justice, 1988). Initial findings revealed that both youth and staff attitudes were more positive than controls, and that program youths were less likely than controls to be rearrested or reincarcerated one year after their release from the program. Approximately 25% of the experimental group did not complete the program, however, and were removed and placed in the control institutions. These youths formed the bulk of those in the control group who recidivated, thus providing evidence that the approach here may not be able to work with particularly difficult adolescents (Greenwood, Turner & Rosenblatt, 1989).

Cognitive problem-solving and skills training interventions have also become popular in institutions, based on a common belief that many delinquents lack these skills (Hollin & Henderson, 1984; Veneziano & Veneziano, 1988). Several studies showed that skills training with adjudicated youths can be effective, improving skill levels and reducing rearrest rates for up to one year after training (Hazel, Schumaker, Sherman, & Sheldon-Wildgren, 1982). The evidence in this area is not unequivocal, though, with Glick and Goldstein (1987) showing that a skills training, anger-coping, and moral reasoning program with 51 institutionalized delinquent boys produced positive changes in prosocial behavior, but no effect on antisocial behavior.

Results like these from demonstration programs, though, only provide part of the picture. What happens with the model once implemented in standard practice is another issue. Examinations of the likely effects of standard practice and the relative effects of different general types of institutional programming have also been done, and these analyses provide a broader view of the effectiveness of institutional treatment.

A recent review of intervention strategies using a "ballot-box" technique of tabulating findings from individual studies concluded that there was little evidence for the effectiveness of rehabilitation strategies, since more than half of the studies indicated no difference or negative findings (Lab & Whitehead, 1988). In contrast, a meta-analysis of residential treatment programs by Garrett (1985) found an overall positive effect of institutional programs, indicating that program participants reached a higher percentile on various outcome measures than did the controls in the studies examined. Based on these results, Garrett concluded that treatment in residential settings does "work". Finally, in a careful reanalysis of the studies included in the Lab and Whitehead (1988) review and another, similar set of studies, Andrews et. al. (1989) concluded that appropriate correctional treatments were more effective than criminal sanctions, inappropriate treatment, or unspecified treatment, and cut recidivism rates in half, on the average. Unfortunately, despite the sophistication and comprehensiveness of these analyses, it seems that interpretations of the available data appear to rest as much on the depth and style of analysis as on the data themselves.

There is nonetheless some evidence that particular treatment strategies are more effective than others. The most common form of residential treatment--some variant of psychodynamic therapy--has little evidence to support its effectiveness with adolescents (Greenwood, 1986; Tramontana, 1980), although there is some dispute about the interpretation of the analyses done (Meeks & Cahill, 1988). Moreover, individual and group therapy in residential programs appears to have little impact, particularly on recidivism. Family therapy, however, appears to be much more effective (Barton et al., 1985; Garrett, 1985).

Overall, behavioral approaches (e.g., point systems, token economies, behavioral contracting) appear to be more effective at reducing recidivism than nonbehavioral strategies (Andrews et al., 1989; Jesness, 1975). Garrett (1985), for instance, found in a meta-analysis that behavioral programs had a large average effect size across all studies and all outcome measures. The effect size did drop considerably, however, when only the most rigorous studies were included. With recidivism as the sole outcome measure, behavior management programs appeared to have only a moderate effect size (Garrett,1985).

As a final note regarding the effectiveness of institutional treatment, it should be recognized that, even though program content is important, it often may not be the most influential factor determining whether a program is successful. In an institutional effort, the principal difficulties of mounting effective intervention may be that of motivating the adolescents and staff to participate actively. Adolescents in institutions are often those for whom much else has not worked. Moreover, institutional environments have an often overwhelming ethos that can easily compromise even the most sound approach to behavioral change. Finding that the results of treatment efforts in the juvenile justice system are not terribly impressive, therefore, is not too surprising. Making any intervention work in these environments presents a set of formidable challenges (Reppucci & Saunders, 1974).

Community-Based Treatment

Much of the hope of juvenile justice reform within the last 20 years has hinged on the feasibility and effectiveness of innovative community-based treatment approaches. These range from variations on standard community probation, which may entail minimal supervision, to residential placements, which may differ only slightly in terms of atmosphere and community access from institutional placements (Coates, 1981).

Restitution is a dispositional alternative whose popularity (U.S. Dept. of Justice 1985) reflects three major trends in the justice system: the focus on individual responsibility for illegal acts; a growing concern for the rights of victims; and a blurring of the distinctions between criminal and civil law (Staples, 1986). This approach involves the adjudicated youth either paying the victim directly to compensate for the victim's loss or performing a comparable amount of public service. Sometimes, restitution programs also involve direct mediation between the offender and victim (Hughes & Schneider, 1989; Schneider, 1986). Victims appear to be more satisfied by restitution than other programs (U.S. Dept. of Justice, 1985), and some evidence suggests that restitution can decrease an offender's likelihood of readjudication (Schneider & Schneider, 1985). Overall, though, evaluations of restitution programs offer limited support for their effectiveness (Schneider, 1986; Schneider & Schneider,1985).

Of the residential placement options in community treatment, one of the most popular is the group home. The Teaching Family Model, in which a trained couple live with about six chronic delinquents, was developed at Achievement Place in Kansas and has been the most carefully implemented and tested approach of this sort. The Teaching Parents administer a systematic behavioral system of points and privileges to guide the youth's behavior, and the youths typically attend local public schools (Quay, 1987b).

Several evaluations of the Teaching Family homes have found that they receive high satisfaction ratings from participating youth and their families (Kirigin et al., 1982) and that they significantly reduce residents' delinquent behavior and substance use compared to youth in other group homes while they are in the program (Braukman et al., 1985; Kirigin, Braukman, Atwater, & Wolf, 1982). However, these behavioral differences tend to disappear once the youth have left the home (Braukman et al., 1985; Kirigin et al., 1982; Quay,1987b). Weinrott, Jones, and Howard (1982), for example, found no differences between Teaching Family homes and comparison group homes on measures of behavior, occupational status, or adjustment following the youth's release and concluded that these programs are cost effective only in terms of educational progress.

Wilderness camping programs for juvenile offenders appear to suffer the same problem of generalizability. Although a variety of organizations offer somewhat different outdoor experiences for adolescents, all of the approaches rely on the natural stresses and contingencies provided by the wilderness to encourage personal development and group cooperation. Unfortunately, the impact of these programs on participants has not been systematically evaluated, despite subjective claims of their effectiveness (Greenwood, 1986). In an interesting evaluation of various treatment approaches using a Best-Worst-Midpoint analysis, Roberts and Schervish (1988) concluded that wilderness programs were most effective relative to risks and costs, though they did not report the outcome data upon which their analysis was based. In an experimental evaluation of the ACTION wilderness program in Canada, Winterdyk and Roesch (1981) found that randomly assigned participants showed initial gains on personality measures compared to probation-as-usual controls, but that these differences disappeared after 4-6 months, and there were no differences in recidivism rates between the two groups. Baer and his colleagues, (1975) found that participants in an Outward Bound program had significantly lower recidivism rates than comparison youth, but these results may be due to a questionable independent variable based more on program leaders' ratings than on differential treatment of the two groups. In sum, wilderness programs appear to have potential benefit for some youth, but the nature, extent, and conditions under which positive outcomes occur is unknown.

In light of the lack of success of many institutional or specialized programs at reducing the likelihood that "treated" youth will be rearrested and readjudicated, some researchers have suggested that more attention be given to community aftercare services (Altschuler & Armstrong, 1988). Aftercare programs serve a dual role of supervising high risk parolees and providing services to facilitate their readjustment to community living. Traditionally, aftercare services have been a much lower priority than the control of offenders during their incarceration, but the recent focus on chronic, "career" delinquents and criminals has rekindled interest in ways of supervising their behavior following release (Blumstein et al., 1985).

One form of aftercare is the intensive probation supervision approach. Used with both adults and juveniles, this approach uses more frequent (several times per week, rather than once or twice per month) contact between the probation officer and the youth. Probation officers often spend much of their time finding appropriate services for their wards and the youth's families. The major role of these services, however, appears to be that of providing intense surveillance in lieu of institutional placement (Armstrong, 1988a, 1988b). These programs report an average recidivism rate of 16% during the program, some of which is likely due to the increased supervision levels (Armstrong, 1988b).

Although systematic evaluations of juvenile intensive probation programs have been sparse (Shaw, 1974; Fowles, 1978), a most systematic evaluation of this type of program was recently completed by Barton and Butts (in press). In this investigation, adolescents were assigned randomly to one of three different intensive probation programs instead of being sent to institutional placement. Interview and record followups of the more than 500 adolescents involved in the study for approximately two years showed no higher rate of rearrest or self reported delinquency for the community group, when time at large in the community was considered. Cost analyses, however, showed the institutional placements to be approximately three times as expensive than community supervision.

Community versus Institutional Treatment

Fueled by the inevitable tension in juvenile justice between rehabilitation and retribution, much has been made of the relative advantage of either community or institutional treatment (Armstrong & Altschuler, 1982; Sarri, 1981). Those who espouse a justice focus for the system argue that juveniles should be held accountable for their actions and punished accordingly (Regnery, 1986; Van den Haag, 1982). In contrast, those who favor rehabilitation argue that community level factors must be addressed by interventions and that treating youth outside of their home environments will have little impact on their behavior once they return to their communities (Clements, 1988). Unfortunately, there are no clear empirical tests of the advantages of each approach. Some evidence on this issue exists, but ideology about the role of juvenile justice, rather than social science fact, has much to do with how the value of each approach is assessed.

Probably the most relevant natural experiments that provide information about this dispute are those surrounding several attempts to radically alter state systems of juvenile justice. In the early 1970s, Jerome Miller, the Commissioner of the Massachusetts Department of Youth Services, responded to concerns about juvenile institutions by initiating a massive deinstitutionalization of juvenile offenders. The institutions were closed, and youth returned to their communities or transferred to small, community-based residential facilities. Massachusetts' lead was followed by similar initiatives in Pennsylvania, Utah, and Vermont. In all of these states the deinstitutionalization movement was not followed by an increase in either the frequency or seriousness of juvenile crime (Siegel & Senna, 1988).

Studies of the Massachusetts Experiment revealed that the community circumstances to which the youth returned predicted their adjustment to deinstitutionalization. Those who returned to communities with alternative, nonresidential programs were half as likely to be rearrested as those who were placed on informal probation (Coates, 1984). Moreover, youths who returned to social networks that included delinquent peers were more likely to be rearrested than youths who reported having a positive relationship with at least one law-abiding adult (Coates, 1981). Judging from these results, it appears that community influences may have a greater effect on recidivism than the location of the treatment program.

Data directly comparing the effectiveness of community-based versus institutional treatment are sparse, and existing studies have produced conflicting results. For example, Murray and Cox (1979) examined archival data and found that institutionalized youths showed a greater "suppression effect", or decrease in number of arrests during the year following intervention, than youths placed in community programs. However, Lundman (1986) used this procedure to show that data from the community-based Provo Experiment (Empey & Lubeck, 1971) revealed no difference. Given that the latter programs utilized random assignment procedures and a carefully specified and implemented intervention, their findings may be more valid than those of Murray and Cox. Furthermore, although a meta-analysis of community-based programs produced consistently positive effect sizes (Gottschalk, Davidson, Gensheimer, & Mayer, 1987), these effects were roughly equivalent to those reported in a meta-analysis of correctional treatment (Garrett, 1985). To complicate matters further, the confidence intervals around the effect size estimates in both critiques usually contained zero, indicating the possibility of no effect. Not surprisingly, the further question of the cost-effectiveness of the different approaches must also still be considered an open question (Siegel & Senna, 1988; Klein, 1983; Roberts, 1987) until more controlled studies taking into account the total cost for equivalent treatments in both settings can be done. Depending on which tests using identical techniques are relied upon, one can get very different conclusions about the relative efficacy and value of community or institutional interventions.

Two recent methodologically sophisticated studies have produced some seemingly sounder results, however, and may clarify the situation somewhat. Wooldredge (1988) examined the outcomes of 11 different dispositions ranging from outright release to a combination of more than two months detention with two years probation. Controlling for many variables that are known to effect recidivism (e.g., locality, arrest history, seriousness of crime), Wooldredge found that shorter periods of supervision (<1 year) and detention (<2 months) were associated with decreased likelihood of recidivism, while longer (>2 years) periods of community-based treatment were associated with reduced recidivism. In addition, in a meta-analysis of correctional treatment programs, Andrews et al. (1989), found that appropriate community-based treatment produced stronger effects than institutionalization. The greater specification of treatment along with control of other influences on recidivism in both of these studies provide more confidence that community-based treatments are more effective at reducing recidivism than are punishment or treatments in institutions, as long as the community involvement is appropriate and extensive.

Summary of Treatment

Regarding treatment, it is clear that a massive amount of data has been generated but that the limited amount of solid information contained in this corpus of work makes judgment about the most effective aspects of institutional and community programs difficult. Within an institutional setting, there is some evidence that behavioral (Andrews et al., 1989), cognitive problem-solving and skill development (Serna, Schumaker, Hazel & Sheldon, 1986), and family therapy interventions (Barton et al., 1985) are more effective than peer group (Gottfredson, 1987) or individual therapy interventions (Garrett, 1985; Greenwood, 1986). Teaching Family group homes appear to reduce behavior problems during treatment, but these effects disappear after the adolescent leaves the group home (Braukmann et al., 1985; Kirigin et al., 1982). Wilderness programs in general have failed to show lasting effects (Kelly & Baer, 1971; Winterdyk & Roesch, 1981), or document the relevance of these programs for the juveniles and their subsequent adjustment in their own communities. Similarly, restitution programs appear successful for some youth in some circumstances (Schneider, 1986), but questions remain about the conditions necessary for restitution to work. Concerns about the importance of community aftercare services have recently surfaced (Altschuler & Armstrong, 1988), and juvenile intensive probation programs are becoming more widespread (Armstrong, 1988a, 1988b), and the most recent evaluation of these efforts looks like these programs may be at least as effective as institutional care at a proportion of the cost (Barton & Butts, in press). Along the same lines, meta-analyses of community versus institutional care (e.g., Wooldredge, 1988) seem to indicate that shorter stays in institutions and longer involvement with community services might be optimal strategies.

In sum, evidence for the effectiveness of both institutional and community treatment programs is massive but flawed enough to be far from convincing. Overall, longer or more intensive community-based interventions that improve family functioning, incorporate some form of behavioral intervention, and modify delinquents' social networks seem the most promising, provided that they are appropriate to the juveniles' needs and strengths. Although institutional treatment may be necessary for some offenders, community-based treatment may be appropriate for many more youth.

Implications and Conclusions

This review has covered a broad range of issues and findings related to the prevention and treatment of delinquency. It would be heartening if it had become readily apparent what singular approach or technology was best for dealing with youths in the juvenile justice system. Unfortunately, but rather predictably, none has appeared. Given what we know about the complex, socially imbedded nature of delinquency and the realities of service provision, it is unreasonable to expect that any approach would be uniformly applicable and efficacious.

This does not mean that the literature on prevention and treatment is worthless. On the contrary, it provides some clear leads about strategies for establishing more promising services, and some information about particularly promising approaches. As stated at the outset, however, coming to conclusions in this area requires a weaving of information about many of the interventions examined. So what are some of the more general lessons that emerge from this review?

First, we would be led to conclude that it is unreasonable to expect that any intervention should have a long lasting, "inoculation" effect against future antisocial behavior by adolescents, and that a reorientation of what should be expected from services is needed. The standard by which most interventions are judged is whether treated youths engaged in any particular antisocial activity within a given time period after program involvement. Repeatedly, we are disappointed to learn that the long term effect of an intervention examined did not produce such an effect, and we then assume that the intervention was not powerful enough. Constructing the problem in this way, however, may be misleading.

Based on information from longitudinal investigations, it seems that, for a sizable proportion of identified problem youth, antisocial behavior is likely to recur in different forms across the period of adolescence, as developmental demands and social norms change. Also, because certain antisocial behaviors are more or less prevalent at particular ages, their significance as risk factors for future problems is not stable across adolescence (i.e., there are, to use Bell's (1986) term, "age specific risk manifestations"). This evidence argues strongly that antisocial acts by adolescents are thus not best thought of as "symptoms"; delinquency is not a unidimensional disorder that emerges in adolescence. Instead, each behavior is part of a constellation of behaviors, the form of which changes over the period from early to late adolescence.

These observations hold two related implications for service provision. The first implication is that risk, protective factors, and expected outcome all have to be conceptualized in terms that are sensitive to developmental regularities. Consideration of the shifts in indicators of risk and protection over the course of adolescence should guide the choice of youths for program involvement, the types of activities that might be most useful to pursue at that developmental stage, and the outcomes focused upon. Thinking of risk and protection factors as stable case characteristics is to greatly reduce the potential power of these concepts to contribute to the desired match of a youth to a program. Considering the developmental salience and prevalence of particular behaviors before deciding that they are indicative of a state of "predelinquency" could go a long way toward meeting the ideal of individualizing treatment that is the espoused mission of juvenile justice. In short, what is worth worrying about at one age might not be worth worrying about at another, and identification and programming procedures that do not take this axiom into account will be less effective than they could be.

The second implication of these findings is the necessity to seriously plan for service provision as an ongoing, rather than "one shot", enterprise. In working with youths who appear to have an identifiable propensity for antisocial behavior, interventions should be conceptualized as a series of possible treatments for a problem that is likely to appear again in a different form as new issues and challenges arise. In essence, treatment should adopt more of the approach one might take with a chronic disorder rather than an infection. Management, regular support, and routine care, rather than a dose of a treatment, would be the guiding activities. Such a strategy would mean providing care on an ongoing basis to smaller groups of youths identified in middle childhood, and replacing our present strategy of trying to "fix" the problem each time it reaches crisis proportions.

The second major lesson from our review would seem to be that successful prevention and treatment programs appear to take a broadly based approach, addressing behavior in its social context. Because delinquency is not unidimensional or independent of a variety of social forces, interventions must address multiple issues of the youth's family, school, and peer life to show true progress. There is little evidence that any service, regardless of its modality or theoretical rationale, can produce impressive results when applied in isolation. Early intervention programs that provide comprehensive care to families, cognitive behavioral curriculums that are coupled with changes in the school environment, and individual interventions that work with the adolescents' home, school, and peer environment all provide more impressive results than myopic programs of similar type. Adolescents do not live their lives in the clinical boxes that are convenient for the professional, and the services that have a component of meeting and understanding the adolescent in her/his own social world inevitably seem to post more favorable results.

The third clear lesson from our review would seem to be that services are not delivered uniformly and that it is counterproductive to continue to evaluate them as if this were true. Comparing services only according to their avowed theoretical approach or stated program type appears to be a task with limited return. Better measures of particular program dimensions independent of theoretical justification or basic program type (such as intensity or comprehensiveness of service delivery) as well as operational measures of program operation are clearly needed. Until programs are better described on particular dimensions of operation, it will be difficult to test any notions of how to design truly effective intervention or how to match adolescents to services. An "up close" view of the literature in this area makes it painfully apparent that this is an area badly in need of thought and research.

Aside from providing these general lessons, this review has also uncovered some programs or approaches that appear to hold particular promise, based on documented demonstrations of their effects. First, there is evidence that preventive interventions at an early age may have an enduring effect in reducing delinquent behaviors in early adolescence. Although far from conclusive, the early intervention programs reviewed here present intriguing followup data about experimental groups doing markedly better on multiple measures several years after involvement with the programs. This evidence, if it holds up in future investigations, is of considerable importance. Dollar for dollar and work hour for work hour, early comprehensive services to, and ongoing contact with, families could prove to be a highly powerful and efficient way to limit the negative onset of delinquent behaviors in adolescence. The hope of demonstrating a true primary prevention effect regarding delinquency through such services is an exciting possibility that is hinted at in the present findings.

Regarding secondary intervention, it also appears that there is reason for hope. Family management training coupled with cognitive behavioral approaches seems to hold out the possibility of being an approach that can be applied widely in conjunction with other aspects of community programming (see, e.g., Kazdin, 1987). Although there is still insufficient data to be confident about the long term effects of these approaches on curbing delinquency, the demonstrated short term gains of family intervention of this sort are impressive in themselves. In addition, Feldman et al.'s (1983) program provides evidence that integration of problem youths into prosocial groups may be a useful prevention strategy. Finally, the favorable long term results of broadly based individual interventions like that of Shore & Massimo (1973) make it clear that intensive interventions in multiple spheres of an identified youth can have a lasting positive effect. Although neither the Feldman et al. nor the Shore and Massimo projects had overwhelming numbers of youths involved, the dramatic quality of their findings should promote more work of this type.

Treatment of delinquency, although having little to recommend in its standard approaches, does still have some promise. Regarding conventional institutional treatment, behavioral approaches that involve the family members over sufficiently long time periods in the community have some proven efficacy, but the sparse nature of data in this regard is noteworthy. Perhaps most impressive is the demonstration that intensive community monitoring is as least as effective as institutional care. Looking at the results of the Massachusetts deinstitutionalization movement and the recent study by Barton and Butts (in press) regarding intensive probation, one would be led to conclude that much cheaper community alternatives to institutional care could be put into place successfully.

To summarize, several specific changes in service provision and research are seen as reasonable, based on this review of this literature:

- a reorientation of services to a model of providing ongoing care for a smaller number of adolescents, with outcome focused on the tasks to be mastered and on the markers of risk at different ages,

- an emphasis on community-based services that intervene in multiple spheres of an adolescent's life,

- promotion and testing of program models that integrate identified adolescents into more "normal" group influences

- evaluation of the long term effects of early intervention on later delinquency, and

- the development and testing of models to evaluate dimensions of service provision that are not currently captured by the mere comparison of program types,

In sum, there are reasons for optimism, some directions worth pursuing in programming, and a clear need for reorientation in much of the evaluation of services. Movement on all of these fronts is necessary if we are to deliver on the ideals of juvenile justice.

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THE EPIDEMIOLOGY OF MINOR OFFENDING IN ADOLESCENCE

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MINOR OFFENDING IN ADOLESCENCE (Scott Menard)

EXECUTIVE SUMMARY

1. Data sources. Serious limitations exist to our knowledge of minor offending in adolescence because existing data either do not permit age-specific analysis of illegal behavior in adolescence, or because data which do permit age-specific analysis are out of date for adolescents. Potential sources of data on minor offending in adolescence include:

   a. FBI Uniform Crime Report data on arrests and arrest rates. These data may not accurately reflect illegal behavior of adolescents (as opposed to criminal justice system responses to such behavior).

   b. The National Youth Survey. These data are out of date for adolescents, although for 1976-1980, they provide good data on the epidemiology and etiology of minor offending in adolescence.

   c. The Monitoring the Future study. These data are limited to adolescents who are in school, and to those in late adolescence (age 17 and older).

   d. The National Crime Survey. Because there is often no contact between victim and offender, and because the reliability of victim estimates of ages of offenders is unknown, and because only one minor offense (simple assault) is included in the National Crime Survey, these data can tell us little about the epidemiology of minor offending in adolescence.

2. Trends. Self-report data from the National Survey of Youth, the National Youth Survey, and the Monitoring the Future study, and victimization data from the National Crime Survey consistently indicate that rates of minor offending are stable, fluctuating with no clear trend, or declining over time (Menard, 1987) Arrest data from the Federal Bureau of Investigation's Uniform Crime Reports, by contrast, indicate stable or increasing trends until the early 1980s, and declines in some offenses thereafter (Gold and Reimer, 1975; Menard, 1987; Federal Bureau of Investigation, 1988). Overall, it appears that rates of minor offending by adolescentscrime have been stable or fluctuating without any clear trend since the mid-1960s.

3. Age and crime. Rates of minor assaults and property offenses typically reach their highest levels in early to middle adolescence (before age 16); other offenses such as drug use, prostitution, sale of illicit drugs, and public disorder have their highest rates for individuals in their early twenties. The **likelihood** of being involved in crime is strongly related to age; the **number of crimes committed per person** is not strongly related to age during adolescence.

4. Sex and crime. Males are more likely than females to be involved in minor offending in adolescence, but differences in the rates at which they commit specific offenses are often not statistically significant. Overall, the **number of crimes committed per person** is much higher for males than for females. The

strongest relationships between sex and minor offending in adolescence occur for crimes of minor assault, carrying a hidden weapon, vandalism, disorderly conduct, and alcohol use. Male arrest rates are higher than female arrest rates for most offenses, but female arrest rates are higher than male arrest rates for prostitution and runaway.

5. Race and crime. There are few racial differences in the extent of minor offending in adolescence. Whites tend to be more involved in alcohol and drug offenses (use, sale, buying liquor for a minor), and blacks are more likely to carry a hidden weapon or be involved in prostitution. Overall rates of minor offending for blacks and whites are not statistically significantly different. Black arrest rates are usually higher than white arrest rates, but are lower than white arrest rates for liquor law violations, durnkenness, and runaway. The more frequent involvement of whites in alcohol and drug offenses may reflect average economic differences between whites and blacks in the United States.

6. Residence and crime. Urban and suburban residents have higher rates of minor offending in adolescence than rural residents. Suburban adolescents are more likely to use alcohol than urban residents, but for other offenses, urban residents are more likely to be offenders than suburban residents. Urban residence is more strongly related to the likelihood of committing offenses than to the number of offenses committed per person. Arrest rates are typically highest in urban areas and lowest in rural areas, but for some offenses (liquor law violations, runaway) they are highest in suburban areas.

7. Social class and crime. Social class is not strongly related to minor offending in adolescence. Lower class adolescents are more likely to commit assaults, to carry hidden weapons, and to be involved in prostitution than are middle or working class adolescents, but they are less likely to be involved in disorderly conduct or marijuana use. Overall rates of offending are not statistically significantly different among different social classes. Arrest data on minor offending in adolescence do not include breakdowns by social class.

8. Costs of minor offending in adolescence. Data that would allow us to make reliable or valid estimates of the financial or other costs of minor offending in adolescence are simply not available; even for adult crime or crime in general (without regard to age), the data on the costs of illegal behavior are questionable.

9. Policy implications. Knowledge of the epidemiology of minor offending in adolescence is useful primarily as a basis for theory development and basic research on the causes of illegal behavior in adolescents, and as baseline information for projecting future trends in illegal behavior and in criminal justice system responses (e.g., arrest) to illegal behavior in adolescence. Barring drastic changes in age or sex structure, it is unlikely that knowledge of the epidemiology of minor offending in adolescence will directly result in policy recommendations. A more useful basis for policy implications would be research, both completed and in progress, on the causes of illegal behavior and the effectiveness of different strategies for preventing and controlling illegal behavior in adolescence.

CONTENTS

Introduction....1

Arrest Rates, Prevalence Rates, and Offending Rates....2

Sources of Data on Minor Offending in Adolescence....5

Measures of Minor Offending....10

Trends in Monor Offending in Adolescence....14

EPIDEMIOLOGY OF MINOR OFFENDING....20

Age and Minor Offending....21

Sex and Minor Offending....28

Race and Minor Offending....34

Social Class and Minor Offending....38

Urban-Suburban-Rural Differences in Minor Offending....43

Costs of Minor Offending in Adolescence....46

Conclusion....48

NOTES....55

REFERENCES....56

APPENDICES....63

LIST OF TABLES AND FIGURES

Table 1: Availability of arrest rate data....11

Table 2: Minor offenses included in UCR and NCS data....13

Table 3: Rates of official and self-reported delinquency, 1976-1980....16

Figure 1: Graphs of prevalence of delinquency and ADM problem behaviors...22

Table 4: Age-specific arrest, offending, and prevalence rates, 1976....25

Table 5: Arrest, offending, and prevalence rates by sex, race, location...31

Table 6: Adolescent prevalence and offending rates by social class....40

Table 7: Adolescent arrest rates, selected offenses and selected years....49

THE EPIDEMIOLOGY OF MINOR OFFENDING IN ADOLESCENCE

Introduction

The purpose of this paper is to provide an overview of the epidemiology of minor offending in the adolescent population. *Epidemiology* refers to the study of the distribution of a phenomenon (originally and most often a disease, but other phenomena are also studied epidemiologically) in a population and in segments or subpopulations of the larger population. *Minor nonstatus offending* refers to acts which are illegal for adults and would be criminal offenses if committed by an adult, but which are not contained in the Federal Bureau of Investigation (FBI) Crime Index or in their list of Part I offenses. This definition of minor offenses includes most FBI Part II offenses, but excludes *status offenses* (acts which are not criminal for adults, but which are illegal for minors and may serve as a basis for adjudicating an adolescent as a delinquent) such as runaway and drinking alcohol under age. This definition also excludes *Index offenses* (offenses included in the FBI Crime Index: murder and manslaughter; forcible rape; robbery; aggravated assault; burglary; larceny/theft; motor vehicle theft; and arson), which are typically regarded as the most serious offenses. A list of the FBI Part II offenses and their definitions is provided in Appendix A.

Adolescence includes the ages 11-17. The upper bound is readily justifiable by the fact that at age 18, individuals not only have the right to vote, but they are also subject to original jurisdiction by adult criminal court, rather than juvenile court, in every state in the United States (Levin and Sarri, 1974). Despite the fact that certain other privileges may be withheld until later ages (drinking alcohol until age 21 in many states;

eligibility to serve as President of the United States until age 35), the combination of suffrage and liability under adult criminal law, not to mention departure from high school, which is usual at this age, and the fact that arrests for status offenses such as runaway and curfew violation are no longer recorded in the FBI Uniform Crime Reports (UCR) after age 17, make age 18 an appropriate threshold between adolescence and adulthood. The lower bound, age 11, could conceivably be set a year older or younger. Age 11 is used here as a matter of convenience, reflecting the availability of age-specific information on rates of arrest and self-reported offending. In this report, the term "late adolescence" will typically refer to ages 16-17; "mid-adolescence" to ages 14-15; and "early adolescence" to ages 11-13.

Arrest Rates, Prevalence Rates, and Offending Rates

Past studies of delinquency and drug use have sometimes confused prevalence rates and offending rates. Prevalence refers to the number or percent of persons in a population who report one or more offenses of a given type within a designated period of time (e.g., 1 year). The units of analysis, i.e., that which is counted, are persons. The prevalence rate is typically expressed as the percentage of persons in the population who have reported some involvement in a particular type of offense. The time interval involved is usually designated, e.g., an annual prevalence rate, a three-year prevalence rate, or a lifetime prevalence rate.

Offending rates refer to the number of offenses which occur in a given population during a specified time interval, expressed as a rate per some population base. In this case, it is offenses which are counted, not persons. Offending rates may be expressed as an average number of offenses per some population base (e.g., per 100, per 1,000, or per 100,000). For example, the Federal Bureau of Investigation's annual report of arrests in their Uniform Crime Reports gives arrest rates per 100,000; the National Crime Survey (NCS) reports the victimization rate as a rate per 1,000 persons or households, depending on the offense. As in the case of prevalence, the period of time is usually designated, e.g., monthly offending, annual offending rate, or lifetime offending rate.

Arrest rates are analogous to offending rates. Here, the unit of analysis is arrests of individuals. By contrast, prevalence of arrest, a statistic which is not available from UCR, but which must be estimated on the basis of other data, would be the number of persons arrested instead of the number of arrests of individuals. As with prevalence and offending rates, the length of time for which the arrest rates are calculated should be specified. In this report all rates are annual rates. Prevalence rates are expressed as percentages, and offending rates and arrest rates are expressed as rates per 1,000; this is consistent with the method of reporting used by the NCS, and produces numbers which are fairly easy to interpret.

Self-reported prevalence measures what percentage of individuals have reported committing an offense. Self-reported frequency of offending, or offending rates, indicate how many offenses of a particular type have been reported. Victimization data indicate how many offenses for which there are identifiable victims (a category which excludes, for example, gambling, prostitution, and narcotic drug use) have been committed and discovered by the victim. Offenses known to the police (reported in UCR for Index offenses) indicate how many offenses have been detected directly by the police, or detected by citizens *and* reported to the police *and* not "unfounded," (i.e., police have not decided against recording the offense because there was insufficient evidence to conclude that a crime had been committed). Arrest rates indicate how many arrests have occurred as a result of police knowledge (direct or through citizen reporting) of the commission of crimes *and* the ability of the police to identify a suspect *and* (presumably) obtain sufficient evidence to warrant an arrest *and* the conclusion on the part of the police that an arrest should be made. Emphasis on the word *and* indicates that any of a number of decisions may result in an offense's not being officially recorded, or an arrest's not being made. Despite the apparent differences in the phenomena for which prevalence, offending, and arrest rates act as indicators, some authors have attempted to reconcile apparently disparate results from the various measures, based on the argument that all reflect some underlying level and distribution of crime (Elliott and Ageton, 1980; Gove, Hughes, and Geerken, 1985; Hindelang, Hirschi, and Weis, 1979; Skogan, 1974).

For reviews of the comparability of self-report, victimization, and official statistics, see Gove et al. (1985), Menard (1987), and O'Brien (1985). Menard (1987) is attached as Appendix B to this report. Briefly, although the different measures are often positively correlated with one another, and often show similar patterns of correlation with other variables (sex, race, social class, etc.), the correlations between the different measures are not so strong that we can safely conclude that they measure the same thing. Correlations between official statistics and other variables tend to be similar in sign, but often stronger in magnitude, than correlations between self-report or victimization measures and those other variables. In some cases, correlations between official statistics and other measures are negative, and even the two official measures most commonly used (rates of crimes known to the police and arrests) may produce results sufficiently different to question whether they measure the same phenomenon (Menard, 1987; Menard and Covey, 1988). In this report, the different measures will be treated separately, as measures of different phenomena (i.e., it will not be assumed that arrest rates and self-reported delinquency rates both are valid indicators of illegal behavior), and comparisons of results generated by the different measures will be made.

Sources of Data on Minor Offending in Adolescence

There are many potential sources of information on illegal behavior, and several are noted above; for a good review, see O'Brien (1985). Very few, however, are well adapted to the study of minor offending in adolescence, particularly at the national level. For data on arrests and arrest rates, the FBI Uniform Crime Reports are the best source of information. UCR also provide data on crimes known to the police, but this information is available only for Index offenses, and even for Index offenses crimes known to the police are not disaggregated by age, so it is not possible to tell whether an offenses was committed by an adolescent or an adult. In many cases, the offender is simply not known because there has been no contact between victim and offender (e.g., for larceny or burglary), and it is therefore impossible to ascertain the age of the offender. For arrest data, however, it is possible to obtain the ages of those arrested for different offenses.

A second potential source of information on minor offending during adolescence comes from victimization surveys, particularly the National Crime

Survey. For offenses in which there was contact between victims and offenders, NCS asks followup questions about the characteristics of the offenders. In principle, this could provide information about minor offenses in which there were identifiable victims and some contact between victim and offender, but again crimes without identifiable victims, and crimes in which there was no contact between victim and offender (most larceny and burglary) would give us little information about offenders. As they exist at present, NCS data refer only to Index offenses, with the exception of simple assault (as opposed to aggravated assault) and therefore lie outside the scope of this report. In addition, the ages of offenders as perceived by victims may or may not be reliable and valid indicators of the actual ages of the offenders; no attempt at validation of the ages of offenders has been published for NCS data. Although NCS victimization surveys are important for other purposes, they are of little practical value, as presently constructed, for examining the epidemiology of minor offending in adolescence.

A third potential source of information on minor offending in adolescence is the large and growing body of research on self-reported delinquency. Most self-report studies have been restricted geographically, and cannot be regarded as nationally representative. Three exceptions are the National Youth Survey (NYS), conducted by Delbert S. Elliott and his associates (Elliott and Ageton, 1980; Elliott, Ageton, Huizinga, Knowles, and Canter, 1983; Elliott and Huizinga, 1983; Elliott, Huizinga, and Ageton, 1985; Elliott, Huizinga, and Menard, 1989); the similarly named National Survey of Youth (NSY), conducted by Martin Gold and his associates (Gold and Reimer, 1975; Williams and Gold, 1972); and the Monitoring the Future study (MTF), conducted by Lloyd D. Johnston, Jerald G. Bachman, and Patrick M. O'Malley (e.g., Johnston and Bachman, 1980; Bachman, Johnston, and O'Malley, 1987; Osgood, O'Malley, Bachman, and Johnston, 1989).

The MTF data are inappropriate for the study of minor offending among adolescents for several reasons. First and most importantly, the ages of the respondents in the MTF study are too old (beginning at age 17, the last year of adolescence) to capture the variation in the adolescent population as a whole. In addition to excluding individuals in junior high school or middle school, and in the first three years of high school, the MTF data also exclude those who have dropped out of high school prior to the senior year. Such individuals may be at different risk of minor offending than those who continue in school through the senior year (Elliott, 1966; Elliott and Voss, 1974; Thornberry, Moore, and Christenson, 1985). Third, the categorical responses used in the MTF study readily permit estimates of prevalence (the proportion of the sample who commit a given offense or set of offenses), but not offending rates (the number of offenses committed per 1,000 respondents in the sample). The questions used in the MTF study are included as Appendix C.

This third criticism may also be leveled at the National Survey of Youth. Otherwise, however, the NSY reports on a sample in a more appropriate age range (13-16 in the 1967 survey, 11-18 in the 1972 survey), and uses a household sampling design which produces a sample more representative of adolescents generally, and not only of those who remain in school until their senior year of high school. Although the two samples were separate (the same subjects were not re-interviewed, but a new sample was selected for use in 1972), they may be used to draw some inferences regarding the prevalence of delinquency and trends in prevalence of delinquency over time. For a detailed description of the samples, including changes in sampling procedures between the first and second samples, see Gold and Reimer (1975) and Williams and Gold (1972).

The National Youth Survey is a prospective longitudinal study of respondents who were 11-17 years old in 1976 (the first year for which data were collected) and 21-27 in 1986 (the most recent year in which data were collected). Data were collected for seven waves, annually from 1976 to 1980, then at three year intervals in 1983 and 1986. An eighth wave is planned in order to collect data for 1989. The NYS provides estimates of both prevalence and offending rates for a national sample which has included dropouts as well as those who finished school. Drawbacks to the NYS include the fact that estimates for the adolescent years are available only through 1980 (in 1983 the youngest cohort was 18 years old) and a relatively small sample size (approximately 1700) which results in large variances in estimates of offending rates, and limits the extent to which the data can be disaggregated (e.g., there are too few Hispanics in the sample to permit separate analysis of Hispanics). Advantages include a relatively low attrition rate (less than 20 percent across the seven waves; less than 13 percent across the first six waves) and coverage of a broad spectrum of serious and minor offenses, including all offenses which accounted for at least 1 percent of juvenile arrests in 1974-75. For more detailed discussion of the sample and of measurement of illegal behavior in the NYS, see Elliott and Ageton (1980) and Elliott et al. (1983; 1985; 1989). The discussion of the epidemiology of minor self-reported offending in this report will rely primarily on data from the NYS, with supplementary information from the NSY and MTF studies where appropriate.

The limitations on available sources of data on minor offending (and also on serious offending) in adolescence point to an important need for a new type of ongoing longitudinal study. The Monitoring the Future study has provided valuable data on the attitudes and behavior of high school seniors since 1975. The National Survey of Youth provided two cross-sections of data which allowed us to examine prevalence and trends in delinquency in the late 1960s and early 1970s. The National Youth Survey (something of a misnomer now that the respondents are in their mid-twenties to early thirties) has provided valuable data on the attitudes and behavior of a sample of respondents who have been followed from adolescence through the early adult years. Neither these nor other studies, however, provide us with current, timely, annual information on the attitudes and behavior of contemporary adolescents. Although it is not the purpose of this paper to suggest a need for new research, the need for a periodic (preferably annual) survey of adolescents (and perhaps young adults, or even the general population), a survey which included questions about different forms of problem behavior (including, but not necessarily limited to, illegal behavior and illicit drug use) would be a highly desirable and useful source of information. Had such a survey been in place for the last several years, it would have allowed more thorough documentation of changes in adolescent drug use, drug sales, and gang activity commonly associated in the popular media with the availability of "crack" cocaine. It would have provided us with more detailed, up to data on the distribution of illegal behavior by race, sex, social class, residence, and age. Serious consideration should be given to instituting a periodic self-report survey for adolescents, parallel in its coverage (and perhaps in its sampling design) to the National Crime Survey, but with a focus on self-reported offending rather than self-reported victimization.

Measures of Minor Offending

In the presentation that follows, arrest rates, prevalence rates, and offending rates for minor offenses committed by adolescents will be considered. The arrest rate for adolescents is here defined as:

1,000X(arrests of persons aged 11-17)/(population aged 11-17)

or arrests per 1,000 adolescents. The FBI UCR provide information on the number of arrests of those aged 11-17 for the general population, and for urban, suburban, and rural populations. They also provide data on rates of arrest for selected offenses, including the Index offenses and a limited set of minor offenses (forgery and counterfeiting; fraud; embezzlement; stolen property; weapons violations; sex offenses other than rape and prostitution; drug abuse violations; and gambling) for the general population, for males and females, for whites, blacks, and other nonwhites. Several of these offenses are relatively low-frequency offenses for adolescents, and account for fewer than one percent of all juvenile arrests (forgery and counterfeiting; fraud; embezzlement; sex offenses other than rape and prostitution; gambling). UCR do not provide information on the number or rate of arrests for minor offenses by social class, and they do not provide age-specific rates of arrest for offenses other than those listed above. Additionally, the categories "liquor law" violation and "narcotic drug law" violation do not distinguish between use and other offenses such as possession for sale, except for the total

TABLE 1

AVAILABILITY OF ARREST RATE DATA

Offenses for which arrest data include age-, sex-, and race-specific rates

- All Part I or Index Offenses
- Forgery and counterfeiting
- Fraud
- Embezzlement
- Stolen property offenses (buying, receiving, etc.)
- Weapons offenses (carrying, possessing, etc.)
- Sex offenses (except forcible rape and prostitution)
- Drug abuse/narcotic drug offenses
- Gambling

Offenses for which arrest data are limited to numbers, not rates, of arrest

- Other (not aggravated) assaults
- Vandalism
- Driving under the influence
- Liquor law violations
- Offenses against family and children
- Prostitution and commercialized vice
- Drunkenness
- Disorderly conduct
- Vagrancy
- All other offenses (except traffic)
- Suspicion
- Curfew or loitering law violations
- Runaway

SOURCE: Scott Menard, 1990.

arrested population. Liquor law violations may include alcohol use (a status offense for adolescents) and providing alcohol to a minor (illegal behavior for all ages). Violations of narcotic drug laws may include possession of marijuana (whose use is relatively widespread and often regarded as minor compared to other forms of illicit drug use), possession of "harder" drugs such as heroin and cocaine, and sale of marijuana and other illicit drugs.

In order to calculate rates of arrest for the general population, data from the U.S. Bureau of the Census (1974; 1975; 1982; 1987) on age-specific resident population size were used to estimate the number of individuals in each age group for the population covered by UCR (Federal Bureau of

Investigation, 1976) and NYS (Elliott et al., 1983) data. These estimates of population at each age were used as the denominator, with arrests as the numerator, to calculate age-specific arrest rates. To calculate arrest rates of adolescents by sex and race, rather than divide the arrests for individuals under age 18 by the population under age 18, arrests of individuals under age 18 were divided by the adolescent population, aged 11-17. This was done to avoid seriously underestimating arrest rates for adolescents. According to UCR data, the number and rate of arrests of those aged 10 and under is typically much smaller than the number and rate of arrests for those aged 11-17, so including them in the numerator (without similarly adjusting the denominator) results in only a slight overestimation of adolescent arrest rates. To include ages 10 and under in the denominator as well would result in serious underestimation of adolescent arrest rates. Because arrest data are not available by social class from UCR, only self-reported prevalence and offending rates are provided by social class.

Estimates of prevalence and offending rates are based on Elliott et al. (1983) except for alcohol, marijuana, and other illicit drug use. The offending rates for substance use in Elliott et al. (1983) used categorical scale scores rather than raw frequencies, in contrast to the offending rates for other offenses. In this report, raw frequencies are used for all offenses, including alcohol, marijuana, and other illicit drug use. Consistent with Elliott et al. (1983; 1985; 1989), substance use is considered as a separate category from other types of offending. Elliott et al. (1989) provide evidence that the use of alcohol, marijuana, and other illicit drugs may differ from other offenses in developmental patterns and etiology.

TABLE 2

MINOR OFFENSES INCLUDED IN UCR AND NYS DATA

Uniform Crime Reports (UCR)	National Youth Survey (NYS)
Minor nonstatus offenses:	Minor nonstatus offenses:
Other (non-aggravated) assaults	Minor assaults
Forgery and counterfeiting	
Fraud	Evading payment
Embezzlement	Failure to return excess change
Stolen property offenses	Stolen property offenses
Vandalism	Vandalism
Weapons offenses	Carrying a concealed weapon
Prostitution and commercialized vice	Prostitution
Sex offenses (except forcible rape and prostitution)	Obscene telephone calls
	Sexual intercourse
Drug abuse or narcotic drug law violations	Marijuana use
	Use of other drugs (heroin; cocaine; amphetamines; barbiturates; hallucinogens)
	Sale of marijuana
	Sale of other drugs
Gambling	
Offenses against family and children	
Liquor law violations	Alcohol use
	Obtaining alcohol for a minor
Drunkenness	Drunkenness
Disorderly conduct	Disorderly conduct
Vagrancy	
All other nontraffic offenses	
Suspicion	
Status offenses	Status offenses
Curfew and loitering law violations	
Runaway	Runaway
	Hitchhiking
	Skipping classes
	Lying about age

SOURCE: Scott Menard, 1990.

Ideally, it would be desirable to maintain this separation of use from other substance-related offenses for arrests as well, but this is not practical with UCR data.

The offenses considered in this paper were selected in part to attempt some comparability between UCR arrest data and NYS prevalence and offending rate data for individual offenses. Minor offenses covered by UCR and NYS data are detailed in Table 2. For both UCR and NCS, a summary measure of minor offending was constructed. Because the NYS covers only a subset of UCR Part II offenses, perfect comparability between the two would require that some of the UCR Part II offenses be eliminated from the overall index of minor offenses. Instead, UCR arrests for all Part II offenses excluding runaway (a status offense, not reported for those 18 and older), curfew and loitering law violations (a status offense, not reported for those 18 and older), and liquor law violations (dominated by alcohol use, a status offense), are combined into an index of minor nonstatus offenses. For the NYS, an index of minor offending which excludes status offenses (including alcohol use) and which also excludes marijuana and other illicit drug use was constructed. Substance use is considered separately, and its effects on the overall rate of minor offending are assessed. Status offenses are included in the tables for arrest, prevalence, and offending rates, but not in the summary measures of minor offending.

Trends in Minor Offending in Adolescence

From 1967 to 1972, Gold and Reimer (1975) found little change in self-reported delinquency among adolescents 13 to 16 years of age. The offenses included in Gold and Reimer's study included both serious and minor offenses.

The major exception to this general pattern was drug use, which increased for both males and females from 1967 to 1972. Among males, the frequency and seriousness of delinquency actually appeared to have declined, but this conclusion must be qualified by noting that Gold and Reimer did not have true frequency data. It would be more accurate to say that the percentage of adolescents who reported committing delinquent acts more than 2 or 3 times declined from 1967 to 1972. The absence of any increase in delinquency other than drug use occurred despite apparent increases in juvenile arrests, as documented in FBI Uniform Crime Reports. Insofar as we may draw inferences from their findings, it appears that rates of alcohol and drug use (primarily marijuana use) increased from 1967 to 1972, particularly for females; rates of other forms of minor offending remained stable or declined from 1967 to 1972; and the apparent stability over time in self-reported delinquency contrasts with apparent increases in rates of arrest for those same years.

There were a few exceptions to this overall pattern. White males and females reported more fraud to obtain alcohol in 1972 than in 1967. White females reported more shoplifting, and black females reported more carrying a concealed weapon. Shifting to serious crime, black males reported more robbery in 1972 than in 1967. These, however, are exceptions to broader patterns of decline and stability. For most offenses, differences between 1967 and 1972 levels of delinquency were not statistically significant.

Table 3 (from Menard, 1987) shows the five year patterns for UCR arrest rates and National Youth Survey prevalence and offending rates. From 1976 to 1980, Menard found a similar pattern to that found by Gold and Reimer. Restricting the analysis to 15 and 16 year olds (the results remain the same when 17 year olds are also included. Menard found rates of prevalence and

TABLE 3:

RATES OF OFFICIAL AND SELF-REPORTED DELINQUENCY, SELECTED OFFENSES, AGES 16-17, 1976-1980

Minor Assault			**Weapons offenses**			**Vandalism**			
Arrest rate	Prevalence rate	Offending rate	Arrest rate	Prevalence rate	Offending rate	Arrest rate	Prevalence rate	Offending rate	Year
4.5	44	7.0	1.7	6.5	2.4	4.5	29	1.3	1976
4.6	43	3.0	1.6	8.0	5.5	4.6	missing	missing	1977
4.9	39	2.2	1.7	7.0	3.6	5.0	26	1.3	1978
5.3	37	3.9	1.9	8.4	3.2	5.9	20	0.7	1979
5.0	29	1.9	1.8	7.1	2.4	5.4	19	0.8	1980

Stolen goods			**Prostitution**			**Runaway**			
Arrest rate	Prevalence rate	Offending rate	Arrest rate	Prevalence rate	Offending rate	Arrest rate	Prevalence rate	Offending rate	Year
2.2	11	.42	.30	1.0	.27	8.0	7.9	.10	1976
2.3	12	.98	.33	0.5	.02	7.7	3.6	.30	1977
2.4	13	.39	.35	0.5	.04	6.9	6.0	.10	1978
2.4	8	.29	.32	0.5	.07	6.2	6.0	.12	1979
2.4	6	.16	.37	0.5	.02	5.8	5.5	.09	1980

Drug use/abuse			**Drunkenness**			**Public disorder**			
Arrest rate	Prevalence rate	Offending rate	Arrest rate	Prevalence rate	Offending rate	Arrest rate	Prevalence rate	Offending rate	Year
12	35	10	4.4	32	3.6	8.3	40	3.3	1976
12	40	12	4.9	missing	missing	8.2	30	4.2	1977
12	47	13	4.1	32	3.8	8.4	29	3.8	1978
10	40	13	4.4	32	3.5	9.2	29	2.4	1979
9	39	12	4.2	37	4.0	8.9	27	2.7	1980

General delinquency			
Arrest rate	Prevalence rate	Offending rate	Year
133	71	25	1976
132	71	27	1977
140	70	26	1978
139	64	30	1979
136	61	26	1980

Table notes:

[a] Offending rates may vary considerably from year to year because of unusually high levels of delinquent activity by only one or a few respondents.

[b] Arrest rates for general delinquency are based on total arrests of 16 and 17 year olds; prevalence and offending rates are based on the General Delinquency B scale from Elliott et al. (1983).

SOURCE: Adapted from Scott Menard, "Short-Term Trends in Crime and Delinquency," Justice Quarterly 4:455-474.

frequency of self-reported minor offending to be stable or declining for a range of offenses including minor assault, concealed weapons, stolen property, vandalism, prostitution, runaway, illicit drug use, and public drunkenness. Arrest rates for the same offenses were about evenly divided among increases (minor assault, stolen property, vandalism), decreases (runaway, illicit drug use), and no significant trend (concealed weapons, prostitution). For minor assaults in particular, arrest and self-report (both prevalence and offending rate) trends were in the opposite direction, and the same was true of official arrest and self-reported offending rates for stolen property offenses. In a more detailed analysis, which included both adolescents and young adults (ages 11-24) and allowed for age and cohort effects as well as trends (period effects) over time, Elliott et al. (1989) confirmed Menard's finding of a negative trend for prevalence of general delinquency (a scale dominated by minor offenses), and no trend for the offending rate for general delinquency. Again, if minor delinquency is considered separately, the results are the same: a statistically significant downward trend in prevalence of minor delinquency (aggregated from minor nonstatus offenses), but no statistically significant trend or a weak negative downward trend in the offending rate for minor delinquency. More detailed analysis of trends in alcohol, marijuana, and other illicit drug use, allowing for age and cohort effects, also indicated positive trends in substance use through 1980 and declining trends thereafter, (Menard and Huizinga, 1989), a finding mirrored for high school seniors in the Monitoring the Future study (Johnston, O'Malley, and Bachman, 1984).

The results from the National Survey of Youth (Gold and Reimer, 1975) and the National Youth Survey (Elliott et al., 1989; Menard, 1987) are quite similar, and we may repeat the conclusions made in connection with the NSY for the NYS. Despite differences in sampling, measurement, and methods of analysis, both studies found increases in alcohol and illicit drug use, stability or decline in other minor offenses, and contrasting increases or stability in arrest rates for most offenses. The lengths of the periods spanned by both studies are relatively short, only five years, but the consistency of the results gives us greater reason for confidence in their validity.

Although not strictly applicable in the present context, results from the National Crime Survey (for Index offenses and for simple assault, for both adolescents and non-adolescents) and the Monitoring the Future study are also consistent with those from the NSY and the NYS. NCS victimization rates show no statistically significant trend from 1973 to 1982, but UCR arrest rates for the same offenses in the same period are statistically significantly increasing for four of the six NCS offenses (Menard, 1987). For minor offenses, MTF prevalence rates for 1975-1981 (Thornberry, 1989) or for 1975-1985 (Osgood et al., 1989) also indicate stability and little variation over time. There is a general consistency between victimization and self-report measures which suggests that for both minor and serious offenses, rates of offending may fluctuate from year to year, but these fluctuations are minor deviations from a long term pattern of stability in prevalence and offending rates. These results, coupled with generally increasing rates of arrest for minor and status offenses over the time periods studies, suggest that (a) rates of minor offending tend to be fairly stable over time, and (b) arrest data do not provide a valid indication of trends in minor offending by adolescents.

EPIDEMIOLOGY OF MINOR OFFENDING

There exists a substantial literature on the relationships of criminal and delinquent behavior with age, sex, race and ethnicity, social class or status, and place of residence. The earliest examples of this literature may be found in the work of the French cartographers Guerry and Quetelet (see Vold and Bernard, 1986:131-132), and contemporary examples abound. Although not as extensive, a similar literature exists on the relationships of alcohol and drug use with the same demographic variables, most of it (like the popularity of the drugs with which it is concerned) developed since World War II (see, for example, Kandel, 1980). Only the literature on alcohol use and its associated problems is substantially older.

In the discussion that follows, the literature on each of the demographic correlates is selectively reviewed, and findings from the FBI Uniform Crime Reports and the National Youth Survey regarding the relationships of delinquency and substance use to sex, race, social class, age, and urban residence are presented. The conclusions derived from past literature will be compared with those obtained from UCR and NYS data. Note that much of the literature on the epidemiology of crime and delinquency deals with offending in general, and not specifically with minor or serious offending. Insofar as general offending patterns are dominated (as they tend to be) by minor offenses, the literature should be applicable to minor offending in adolescence.

Age and Minor Offending

Studies of the relationship between age and delinquency concur that delinquent behavior peaks some time in mid-adolescence (around age 15) to late adolescence (around age 17) and declines thereafter. Hirschi (1969) found a weak relationship between age and delinquency, with delinquency highest in mid-adolescence. Gold (1970) found that seriousness of self-reported delinquency was highest around age 15. Gold and Reimer's (1975) data for 1972 supported this conclusion, but Gold's data for 1967 (Williams and Gold, 1972) suggested that delinquency simply increases with age (up to age 16). Dentler and Monroe (1961) also found that delinquency increases with age during adolescence, but Vaz (1965), in a Canadian sample, found younger adolescents to be more aggressive. For official delinquency, as indicated by arrest rates, the evidence appears to be somewhat more consistent, indicating a peak for minor offending in middle to late adolescence (ages 15-17), but there is some variation by specific offenses (Farrington, 1986).

Age structure is a fairly good predictor of trends in victimization (which deals primarily with serious offenses) and self-reported delinquency (Steffensmeier and Harer, 1987) as well as levels of official delinquency (Chilton and Spielberger, 1971). Figure 1, adapted from Elliott and Huizinga (1984) is based on age-specific averages over the first five waves, 1976-1980, of the National Youth Survey. It confirms that prevalence rates of some minor offenses such as minor assaults and vandalism decline sharply after age 18 (the age at which individuals fall under the initial jurisdiction of the adult criminal courts), and may peak at some earlier age. Other offenses such as public disorder, marijuana and other illicit drug use, and "illegal services"

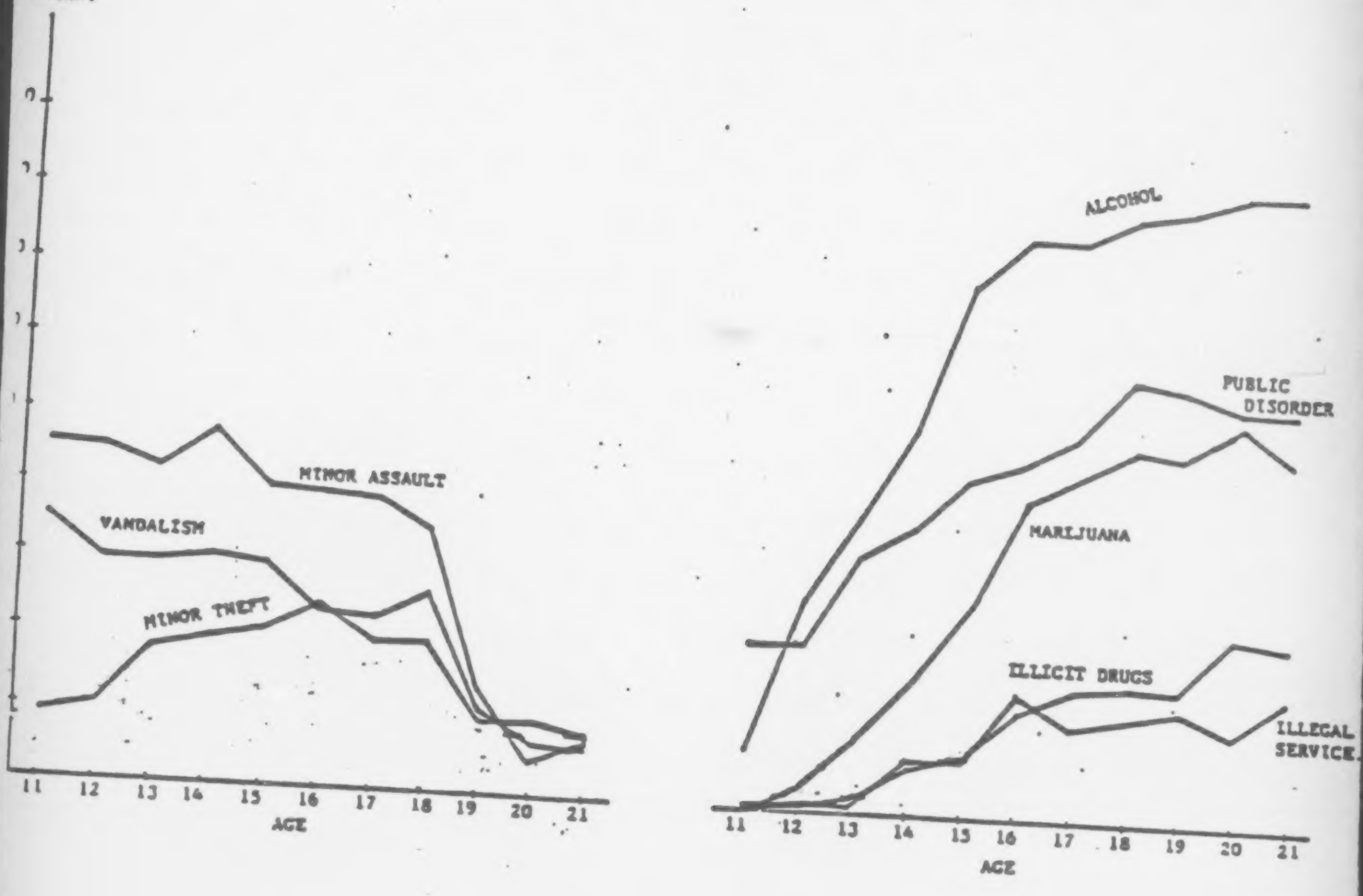

FIGURE 1

PREVALENCE OF MINOR DELINQUENCY IN ADOLESCENCE, BY AGE, 1976-1980

SOURCE: Delbert S. Elliott and David Huizinga, "The Relationship Between Delinquent Behavior and ADM Problems," National Youth Survey Report No. 28 (Boulder, CO: Behavioral Research Institute, 1984).

(composed primarily of sale of marijuana and other illicit drugs) continue to increase beyond adolescence, and may not peak until age 20 or older. According to Kandel (1980), rates of both legal and illegal drug use peak around ages 18-21 and decline thereafter. Elsewhere (Kandel, 1982) she qualifies this by indicating that different drugs peak at different ages: alcohol and tobacco between ages 18 and 34, stimulants at ages 26-34, tranquilizers around age 26, and sedatives after age 50. Penning and Barnes (1982) suggest that marijuana use among adolescents increases with age, and it is unclear when it declines. Elliott et al. (1989) find evidence for a decline in alcohol, marijuana, and other illicit drug use beginning around age 20.

Some debate has recently been generated by Hirschi and Gottfredson's (1983) contentions regarding the age-crime relationship. Hirschi and Gottfredson have asserted, based more on empirical data than on theory, that the rate of criminal or delinquent behavior tends to peak some time during adolescence, and that this relationship is relatively (a) invariant over time, (b) invariant across cultures, (c) stable across different types of crime, and (d) not explainable by other variables used in criminological research. Greenberg (1977; 1985) notes that longitudinal and cross-sectional data may produce different empirical results regarding the relationship between age and crime, and the apparent peak in adolescence does not always occur in longitudinal data. Elliott et al. (1989) present age, period, and cohort data that are inconsistent with stability across different types of crime (as are the data in Figure 1), and Kercher's (1988) review of past research suggests that sociological factors can, in fact, explain the age-crime relationship.

Farrington (1986) also presents evidence which runs counter to Hirschi and Gottfredson's claims. It remains the case, however, particularly when longer age spans are considered, that delinquent and criminal behavior eventually declines with age and eventually, among the elderly, becomes much lower than it was in adolescence (Covey and Menard, 1987; Kercher, 1987). For some offenses, particularly drug use, though, the peak age is not in adolescence, but at some age in the twenties or thirties (Elliott et al., 1989; Kandel, 1980 and 1982; Menard and Huizinga, 1989; Penning and Barnes, 1982.

Table 4 presents age-specific arrest rates per 1,000 based on UCR; and age-specific offending and prevalence rates based on the NYS (Elliott et al., 1983) for the year 1976, for ages 11-17, for selected minor offenses and for total minor nonstatus offenses. For arrest rates, ages 11 and 12, and ages 13 and 14, are aggregated because of the way these data are presented in the UCR. Note that trends for 1976 (or any other particular year) may not conform to the age-specific averages, taken across several years, presented in Figure 1.

For arrest rates, all except vandalism and runaway appear to be highest at age 17, and to increase monotonically up to age 17. Vandalism and runaway peak at age 15. Total Part II offenses (including status offenses) increase monotonically to age 17, but the increase is more rapid at earlier ages than at later ages. Minor nonstatus offenses show the same pattern as total Part II offenses.

Offending rates do not show as consistent a relationship with age as do arrest rates. Offending rates are, moreover, several times to thousands of times higher that arrest rates for most offenses at most ages. This is not surprising, in light of past research on comparisons between arrest statistics

TABLE 4

AGE-SPECIFIC ARREST, OFFENDING, AND PREVALENCE RATES, 1976

OFFENSE	AGE						
(Age for NYS)	11	12	13	14	15	16	17
(Age for UCR)	11-12		13-14		15	16	17
Arrest rate (arrests/1000)							
Other assaults	.80		1.97		2.98	3.60	3.66
Stolen property	.21		.70		1.31	1.75	1.78
Vandalism	2.15		3.70		4.17	3.97	3.31
Weapons	.10		.41		.87	1.23	1.42
Prostitution	.00		.02		.07	.16	.33
Liquor laws	.10		1.03		3.89	8.19	11.11
Narcotic drug laws	.17		1.66		5.10	8.61	10.57
Drunkenness	.05		.39		1.33	2.63	4.42
Disorderly conduct	1.04		2.81		4.80	6.32	7.10
Runaway	1.24		6.18		10.70	9.09	3.79
Total Part II[a]	9.82		30.99		57.20	70.26	70.76
Minor nonstatus offenses[a]	7.94		21.49		37.59	46.43	52.62
Offending rate (offenses/1000)							
Minor assaults (ns[b])	2770	12050	9310	6860	7540	2240	12730
Stolen goods (ns)	60	140	280	1120	770	440	400
Vandalism (ns)	1430	3080	3400	1700	6330	1550	910
Hidden weapon (ns)	30	330	720	410	1060	2340	2440
Prostitution (ns)	0	10	40	10	20	10	590
Liquor laws:							
Alcohol use (.01)	290	1400	2100	7790	10560	15790	17530
Liquor for minor (.01)	0	10	120	100	670	2650	1240
Narcotic drug laws:							
Other drug use (.05)	0	20	460	3320	520	1270	2390
Marijuana use (.01)	10	160	1940	8430	11740	13250	18210
Sale of other drugs (ns)	0	0	10	20	40	50	1650
Sale of marijuana (ns)	0	20	1030	1950	610	1340	920
Drunkenness (.01)	10	40	120	1040	1030	4760	2180
Disorderly conduct (ns)	920	4040	1750	2050	6650	3240	3390
Runaway (ns)	40	90	40	100	130	100	110
Minor nonstatus offenses (ns)	4120	17390	17620	14240	18900	11240	23270

TABLE 4 (continued)

OFFENSE	AGE 11	 12	 13	 14	 15	 16	 17
Prevalence (percent)							
Minor assaults (.01)	45	53	57	54	54	44	43
Stolen goods (.01)	3	6	10	11	14	9	14
Vandalism (.05)	36	37	37	40	40	29	29
Hidden weapon (.01)	2	5	7	7	12	6	7
Prostitution (ns)	0	1	2	1	2	1	1
Liquor laws:							
Alcohol use (.01)	8	23	31	55	65	70	82
Liquor for minor (.01)	0	0	2	3	5	13	12
Narcotic drug laws:							
Other drug use (.01)	0	1	1	5	8	10	16
Marijuana use (.01)	0	2	9	18	28	31	39
Sale of other drugs (ns)	0	0	1	1	1	1	2
Sale of marijuana (.01)	0	1	2	5	6	9	10
Drunkenness (.01)	1	2	6	10	20	31	33
Disorderly conduct (.01)	18	26	29	33	42	38	42
Runaway (ns)	4	5	5	6	6	7	9
Minor nonstatus offenses (.01)	53	60	63	68	69	66	68

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[a] Total Part II offenses are all offenses reported in Part II of the FBI Uniform Crime Reports, except for arson (which is presently considered a Part I Index offense); Minor nonstatus offenses are all Part II offenses except for Curfew/loitering law violation and Runaway (for both of which data on arrests are collected only up to age 17).

[b] ns=not statistically significant.

SOURCES: Adapted from Delbert S. Elliott, Suzanne S. Ageton, David Huizinga, Brian A. Knowles, and Rachelle J. Canter, The Prevalence and Incidence of Delinquent Behavior: 1976-1980 (Boulder, CO: Behavioral Research Institute, 1983); Federal Bureau of Investigation, Age-Specific Arrest Rates and Race-Specific Arrest Rates for Selected Offenses 1965-1986 (Washington, DC: U.S. Government Printing Office, 1988); and data provided by Sharon Profiter.

and self-reports for minor offenses; see, in particular, Empey and Erickson (1966) and Erickson and Empey (1966). Elliott et al. (1983) provided analysis of variance tests for the statistical significance of the relationship between age and offending rates. Levels of statistical significance (probabilities) appear in parentheses after the offense in Table 4. Of the offenses listed in the liquor law violations (alcohol use and providing alcohol for a minor), drunkenness, and illegal drug use (marijuana use and other illicit drug use) are all statistically significantly ($p < .05$) related to age, and all peak at age 16 or 17 except other illicit drug use. The apparent peak of other illicit drug use at age 14 is probably an artifact of sampling variation.

Age-specific average rates for 1976-1980 (see Figure 1) show a general pattern of increase in other illicit drug use until age 20.[1] None of the other offenses is statistically significantly related to age. Most appear to peak in later adolescence, and vandalism and runaway peak at age 15 (the same result as that obtained for arrest rates), but annual fluctuations in rates tend to be large. This, like the apparent peak in drug use at age 14 in 1976, may be a function of relatively small sample size ($N = 1725$) which may allow one or two cases to exert a large influence on annual rates, especially when those rates are disaggregated by subpopulations such as age groups.

Prevalence rates (the percentage of respondents who report having committed an offense) are less susceptible to annual fluctuations, and all of the relationships between age and prevalence except for prostitution, sale of other illicit drugs, and runaway are statistically significant. These three offenses have such low prevalence rates throughout adolescence in 1976 that there is little variation to be explained by an analysis of variance.

Prevalence rates for minor assaults are highest in early adolescence, at age 13. Vandalism and carrying a hidden weapon peak at ages 14-15, stolen goods and disorderly conduct at ages 15-17, purchasing liquor for a minor at age 16, and other offenses at age 17. Prevalence for the aggregated measure of minor nonstatus offenses (excluding alcohol and drug use) peaks as expected at age 15. Inclusion of drug use and especially alcohol use would raise the peak age to 17.

From Figure 1 and Table 4 it is evident that minor offending is typically low in early adolescence, and that minor offending increases until mid-adolescence, late adolescence, or early adulthood, depending on the specific offense. It may then stabilize or decline. A more refined analysis which incorporates period and cohort size effects as well as age effects and which includes young adults (ages 18-24) as well as adolescents (Elliott et al., 1989; Menard and Elliott, 1990; Menard and Huizinga, 1989) suggests that minor nonstatus offending and prevalence rates do, in fact, peak around age 15 or 16, and that alcohol, marijuana, and other illicit drug use peak around age 20. Menard and Elliott (1990) and Menard and Huizinga (1989) are included as Appendix D and Appendix E to this paper.

Sex and Minor Offending

Whether official statistics on arrest or self-report data are used, males have a higher prevalence of delinquent and criminal behavior than females (Blumstein, Cohen, Roth, and Visher, 1986; Clark and Haurek, 1966; Dentler and Monroe, 1961; Elliott et al., 1983; Elliott and Voss, 1974; Gold, 1970; Gold and Reimer, 1975; Hood and Sparks, 1970; Nye and Short, 1957; Slocum and Stone, 1963). This is especially true for more serious offenses

(Gold and Reimer, 1975; Hindelang, Hirschi, and Weis, 1981; Sarri, 1983). Males also tend to have higher offending rates, insofar as offending rates have been measured in past studies (Clark and Haurek, 1966; Elliott et al., 1983; Gold and Reimer, 1975; Williams and Gold, 1972). Based on past research, then, we would expect to find that males had significantly higher prevalence and general offending rates than females, but that this difference should be less pronounced and consistent for minor offenses than for more serious offenses.

Males also have higher prevalence rates of alcohol, marijuana, and other illicit drug use, although the differences between males and females appear to be decreasing over time (Gold and Reimer, 1975; Jessor, 1979; Kandel, 1980 and 1982; Penning and Barnes, 1982). Women, however, are more likely than men to use psychoactive drugs under medical supervision, while men are more likely to use psychoactive drugs without medical supervision (Kandel, 1980). There is little in the literature to indicate whether similar differences exist between males and females in the rate at which they use alcohol or drugs, but the most reasonable expectation is that they would parallel prevalence rates.

Some caveats may be appropriate regarding the comparison of male and female self-reported prevalence rates. Morris (1965) tested groups of known delinquents and presumed nondelinquents in a double blind study in which neither interviewers nor subjects were aware that the criminal records of half of the sample were known. She found that 95 percent of the known delinquent boys admitted their delinquency, but only 75 percent of the known delinquent girls admitted their delinquency when first questioned. An additional 7 percent of the delinquent girls admitted their delinquency upon mild probing by the interviewer. In contrast, Hindelang et al. (1981) found evidence that male and female self-reports had similar levels of validity. They also found that ratios of male to female self-reported delinquency were similar to ratios obtained from official arrest data. Given the typical direction of sex differences in illegal behavior, we may expect some exaggeration of the extent to which male delinquency exceeds female delinquency. Whether that exaggeration is minor (as suggested by Hindelang et al.) or serious (as suggested by Morris) is uncertain.

Table 5 presents arrest, offending, and prevalence rates for minor delinquency in adolescence (ages 11-17), disaggregated by sex, race, and type of location. Rates of arrest for males and females are based on arrests for those under age 18. Female arrests for runaway and prostitution are higher than male rates (male to female ratios of .69 to 1 and .31 to 1, respectively), but males have higher arrest rates for all other offenses. The ratio of male to female arrest rates is as high as 14 to 1 (for weapons offenses). For minor nonstatus offenses, the ratio of male to female arrests is 4.5 to 1; for total Part II offenses (minor plus status offenses) it is just over 3 to 1, reflecting the relatively greater likelihood that if a female is arrested, she will be arrested for a status offense. Males also have higher self-reported offending rates than females. For minor assaults, vandalism, carrying a concealed weapon, alcohol use, and disorderly conduct, male offending rates are statistically significantly higher than female offending rates. For other offenses, the differences are not statistically significant despite generally higher rates for males than for females, again reflecting the high variability in the sample. For some offenses, the male to

TABLE 5

ADOLESCENT ARREST, OFFENDING, AND PREVALENCE RATES, 1976, BY SEX, RACE, AND TYPE OF LOCATION

OFFENSE	SEX		RACE		LOCATION		
	Male	Female	White	Black	Urban	Suburban	Rural
Arrest rate (arrests/1000)							
Other assaults	3.26	.92	1.61	6.51	3.47	2.50	.64
Stolen property	1.56	.15	.74	2.25	1.42	1.20	.49
Vandalism	6.10	.54	3.50	3.89	4.81	4.82	1.88
Weapons	1.09	.08	.51	1.52	1.01	.74	.22
Prostitution	.04	.13	.04	.39	.15	.02	.01
Liquor laws	5.48	1.55	4.02	.90	5.26	7.43	3.17
Narcotic drug laws	6.03	1.30	3.92	3.93	5.62	5.17	2.88
Drunkenness	2.12	.35	1.41	.72	1.88	1.57	1.23
Disorderly conduct	5.61	1.35	3.28	6.70	5.93	4.86	1.13
Runaway	4.40	6.36	5.67	4.83	7.05	7.21	5.38
Total Part II	56.09	18.35	36.83	57.04	58.79	51.18	24.57
Minor nonstatus offenses	41.67	9.22	24.70	44.37	41.50	33.93	15.47
Offending rate (offenses/1000)							
Minor assaults	11260**	3350**	7150	11640	10210	4490	9200
Stolen goods	610	290	530	2100	860	260	410
Vandalism	4370*	860*	2040	6880	5740	1950	1280
Hidden weapon	1820*	40	1110	390	1260	860	940
Prostitution	140	20	90	70	30	10	240
Liquor laws:							
Alcohol use	9220**	5510**	7920	6460	6890	8730	6100
Liquor for minor	760	510	750*	100*	450	90	400
Narcotic drug laws:							
Other drug use	1270	900	1250**	180**	920	1150	1070
Marijuana use	7730	6660	7020	9470	12290**	6910**	3080**
Sale of other drugs	370	20	260	10	30	10	640
Sale of marijuana	1310	290	750	1540	1560	610	320
Drunkenness	1610	820	1430	670	1470	1480	660
Disorderly conduct	4610*	1440*	3050	4270	4410	2250	3370
Runaway	770	830	900	450	1390	4600	400
Minor nonstatus offenses	22860**	6320**	15070	18830	22470	10320	15840

TABLE 5 (continued)

OFFENSE	SEX		RACE		LOCATION		
	Male	Female	White	Black	Urban	Suburban	Rural
Prevalence (percent)							
Minor assaults	64**	35**	50	53	53	49	50
Stolen goods	13**	6**	10	10	13**	9**	7**
Vandalism	44**	26**	36	32	38*	37*	31*
Hidden weapon	10**	2**	5**	10**	11**	5**	4**
Prostitution	1	1	0**	4**	2	1	1
Liquor laws:							
Alcohol use	49**	43**	50**	34**	43*	50*	43*
Liquor for minor	6*	4*	5	4	7*	5*	3*
Narcotic drug laws:							
Other drug use	5	6	6*	2*	6*	7*	3*
Marijuana use	19	16	18	15	21**	19**	12**
Sale of other drugs	4**	1**	1	1	2**	0**	0**
Sale of marijuana	16**	5**	5	4	7**	4**	2**
Drunkenness	41**	33**	16**	6**	14	15	11
Disorderly conduct	34**	22**	34**	23**	34	33	29
Runaway	3	5	6	5	6	5	7
Minor nonstatus offenses	78**	54**	67	70	72*	67*	64*

*Statistically significant difference within category (p < .05)

**Statistically significant difference within category (p < .01)

SOURCES: Adapted from Delbert S. Elliott, Suzanne S. Ageton, David Huizinga, Brian A. Knowles, and Rachelle J. Canter, The Prevalence and Incidence of Delinquent Behavior: 1978-1980 (Boulder, CO: Behavioral Research Institute, 1983); Federal Bureau of Investigation, Age-Specific Arrest Rates and Race-Specific Arrest Rates for Selected Offenses 1965-1986 (Washington, DC: U.S. Government Printing Office, 1988); and data provided by Sharon Profiter.

female ratio of offending rates is similar to the male to female ratio of arrest rates, and for others it greatly exceeds the male to female ratio for arrests. For example, the male to female ratio of offending rates for weapons offenses was the highest of the male to female ratios at 46 to 1; for arrests, for which it was also the highest ratio, it was only 14 to 1. This probably reflects a continuous pattern of behavior over time, which only sporadically results in arrest (the ratio between offending and arrest rates is approximately 1,000 to 1) rather than a discrete sequence of offenses, some of which result in arrests.

Overall, the ratio of male to female minor nonstatus offending rates (which is statistically significant), at 3.6 to 1, is similar to the male to female ratio of arrest rates, and is about what we would expect if arrest rates accurately reflected differences in behavior and self-reports were 95 percent accurate for males and 75 percent accurate for females. This does not mean that arrest rates do, in fact, accurately reflect differences in behavior, but it does raise the question of whether differences between male to female ratios for arrest rates and offending rates may be explained in terms of differential accuracy of reporting by males and females on self-report surveys, as described by Morris (1965).

Prevalence rates are also higher for males than for females except for drug use (no statistically significant difference, male to female ratio of .83 to 1) and for several offenses for which male to female ratios are nearly 1 to 1 (sale of other illicit drugs, prostitution, runaway) indicating nearly equal prevalence rates. All of the other differences are statistically significant. For minor offenses as a whole, the male to female ratio of prevalence rates is only 1.4 to 1. This is similar to ratios of male to female prevalence rates obtained in other self-report surveys, and coupled with the data on offending rates, it suggests that males are 40 percent more likely than females be involved in illegal behavior, and that for males and females who are involved in illegal behavior, males commit illegal acts over twice as frequently as females. In other words, the individual offending rates (Blumstein et al., 1986) as well as the prevalence and offending rates are higher for males than for females.

Race and Minor Offending

When officially recorded arrests are the sole criterion for determining the relationship between race and criminal or delinquent behavior, there is no question that blacks have higher rates of arrests for minor offenses than whites (Pope and McNeely, 1981). With the advent of self-report measures, however, the question arose whether arrest rates accurately reflected race differences in criminal or delinquent behavior. Several self-report studies (Chambliss and Nagasawa, 1969; Elliott and Voss, 1974; Epps, 1967; Gould, 1968) found no difference between whites and blacks, and Gold (1970) found no difference between blacks and whites when social class[2] was controlled. Williams and Gold (1972) found no racial difference in frequency (which was measured on a very limited categorical scale in that study), but did find that blacks were more likely (i.e., prevalence) to commit serious offenses than whites. Hirschi (1969) and Slocum and Stone (1963), on the other hand, did find slight differences by race. Most of these studies focused on relatively minor offenses, but serious (Index) offenses showed the same pattern.

More recent research (Elliott and Ageton, 1980; Hindelang et al., 1981) indicates that there are, in fact, differences in self-reported delinquent behavior by race, at least for more serious types of illegal behavior. Using the first wave of the NYS, Elliott and Ageton found that blacks had higher self-reported offending rates for predatory property offenses and for a measure of general delinquency which (unlike the measure of minor offending used in this report) included status offenses and other fairly trivial offenses. Hindelang (1978) came to a similar conclusion based on his analysis of personal crimes (both minor and serious) involving lone offenders from the National Crime Survey. Both studies concluded that the representation of blacks among those arrested exceeded their involvement in crime as indicated by NYS and NCS data, but that the general patterns of race differences were accurately reflected in all three measures. More recent research by Huizinga and Elliott (1987) suggests that the race differentials found in the data for the first year are not consistent across waves of the NYS, and that blacks are disproportionately at risk of arrest for any given level of offending.

An additional concern which may offset the apparent lack of black/white differences in self-reported prevalence and offending rates is the finding by Hindelang et al. (1981) that blacks are more likely than whites to underreport their involvement in illegal behavior in self-report surveys (see also Huizinga and Elliott, 1986). Hindelang et al. found higher rates of underreporting for black males (33 percent) and black females (27 percent) than for white males (10 percent) or white females (15 percent). These differences are substantial, and could mask real differences in behavior between blacks and whites.

Specific to alcohol and drug use, while some earlier studies found higher prevalence of marijuana use among blacks, more recent studies find, particularly among younger age groups, that marijuana use is higher among whites, or else that there is no difference between whites and blacks (Jessor, 1979; Penning and Barnes, 1982; Elliott et al., 1989). According to Kandel (1980), whites use more marijuana, tobacco, alcohol, and pills than blacks, but blacks use more heroin. Given the measures used in the present report, and the relatively low frequency of heroin use compared to cocaine, barbiturates, amphetamines, and hallucinogens, we may expect higher prevalence and frequency of alcohol, marijuana, and other illicit drugs among whites than among blacks.

From the data in Table 5, it appears that whites have higher rates of arrest for liquor law violations, drunkenness, and runaway, and blacks and whites have about equal rates of arrest for narcotic drug law violations. For all other minor offenses, blacks have higher arrest rates than whites, and the overall ratio of black to white arrest rates for minor nonstatus offenses is 1.8 to 1. If status offenses are also included, the ratio falls to 1.5 to 1, suggesting that whites are more likely to be apprehended for less serious offenses than are blacks. For self-reported offending rates, the black to white ratio is only 1.2 to 1, and the only two offenses (liquor law violations and drug use) for which black-white differences are statistically significant have higher offending rates for blacks than for whites. Note that the difference in arrest and offending rates is approximately what we would expect if arrest rates accurately reflected actual behavior and if the black-white differences in accuracy of reporting found by Hindelang et al. (1981) were

198

applicable to the NYS respondents. The arrest rate for minor nonstatus offenses is still slightly higher than expected (and the difference persists if alcohol and drug use are included in minor nonstatus offenses for self-reported offending rates), leaving open the possibility that there is differential processing of blacks and whites by the juvenile justice system, particularly the police. Similar findings are obtained if white-nonwhite instead of white-black comparisons are used.

Prevalence of alcohol use, drunkenness, disorderly conduct, and drug use are statistically significantly higher for whites than for blacks. Prevalence of carrying a hidden weapon and prostitution are higher for blacks than for whites. There is no other statistically significant difference in prevalence between blacks and whites, and the black to white ratio for overall prevalence is practically 1 to 1 (the prevalence for blacks is higher, but the difference is not statistically significant). Two points should be borne in mind when considering these results. First, the explanation for more extensive use of alcohol and drugs (and related offenses) by whites may be found in the average financial advantage whites have over blacks. Put simply, whites may, on average, be better able to afford the financial cost of chemical recreation than blacks. Second, the principal differences that have emerged between blacks and whites, and which may account for differential arrest rates between the two groups, have been on more serious offenses (Elliott and Ageton, 1980). The omission of such offenses from this report may understate the ratio of black to white arrests, offending rates, or prevalence. On the whole, the results presented here are consistent with results from prior studies of black/white differences in offending: little or no difference in prevalence, some difference in offending rates, and a difference in arrest rates that is greater than what we would expect based on self-reported prevalence or offending rates, but which may be consistent with underreporting by blacks on self-report surveys.

Social Class and Minor Offending

Early studies of social class and delinquency were divided in their findings, and the division appeared to be related to whether the self-reports were obtained on anonymous self-administered questionnaires or in face-to-face interviews where anonymity was promised, but the interviewer clearly knew which respondent had confessed to which offenses. Most anonymous self-report studies show no relationship between social class or socioeconomic status and total delinquent behavior (Porterfield, 1943; Nye et al., 1958; Dentler and Monroe, 1961; Akers, 1964; Allen and Sandhu, 1967; Epps, 1967; Gould, 1968; Chambliss and Nagasawa, 1969; Pfuhl, 1970; Farrington, 1973; Elliott and Voss, 1974). This evidence, compiled over a span of thirty years ranges from rural farm areas to large cities, and includes samples in Hawaii, Washington, Kansas, Michigan, and California. It covers a wide variety of juvenile offenses from "incorrigibility" and truancy to robbery and aggravated assault. In a number of interview studies (Reiss and Rhodes, 1961; Erickson and Empey, 1965; Gold, 1966) a weak inverse relationship was found between delinquency and social status.; Gold (1970) found a weak relationship between low socioeconomic status and delinquency for males but not for females. One anonymous questionnaire study on English youths (McDonald, 1969) also found such a relationship. By contrast, two interview studies (Arnold, 1965; Voss, 1966) found the opposite association, that is, high status youth were slightly more prone to delinquency. Based on a review of these early studies of social class and delinquency, Tittle, Villemez, and Smith (1978) concluded that social class was unrelated to criminal or delinquent involvement.

The findings of these early self-report studies were plagued by methodological problems. They often included only trivial offenses (to the exclusion of more serious offenses), and used truncated frequency categories which made accurate estimation of offending rates impossible. In more recent studies, however, when serious delinquency is included, it dies appear to be linked to social class, with lower class youth reporting higher prevalence and offending rates (Elliott and Ageton, 1980; Elliott and Huizinga, 1983; Hindelang et al., 1981). A related point is that most studies of social status and delinquency have measured the social class background of the respondents, rather than the social status of the respondents themselves. Hirschi (1969:82) argues

> ...it is apparent that the child not likely to be going anywhere (but down) is likely to commit delinquent acts. The class of the father may be unimportant, but the"class" of the child most decidedly is not.

Pine (1965) found that downward social mobility was indeed associated with delinquency. Although social class background is used in this report, it should be borne in mind that an alternative measure of the respondent's own status (as we use the respondent's own race, sex, age, and place of residence) might well yield a stronger relationship between social status and illegal behavior. Another possible measure of social class not used here would be the social status of the neighborhood in which the individual lives. This has

TABLE 6

ADOLESCENT PREVALENCE AND OFFENDING RATES BY SOCIAL CLASS, 1976

OFFENSES	PREVALENCE			OFFENDING RATE		
	SOCIAL CLASS			SOCIAL CLASS		
	Middle	Working	Lower	Middle	Working	Lower
Minor assaults	44**	49**	54**	2900	7310	10850
Stolen goods	8	9	11	240	680	450
Vandalism	31	38	36	1130	2720	3730
Hidden weapon	2**	7**	8**	280	540	1800
Prostitution	0*	1*	2*	0	10	180
Liquor laws:						
Alcohol use	50	44	45	7160	7980	6750
Liquor for minor	6	3	5	520	620	790
Narcotic drug laws:						
Other drug use	5	7	4	1520	730	1200
Marijuana use	16*	20*	14*	5870	6780	6330
Sale of other drugs	0	2	1	30	30	450
Sale of marijuana	5	4	4	560	710	770
Drunkenness	16	14	13	880	1370	1400
Disorderly conduct	38*	33*	29*	2330	4110	2730
Runaway	4	6	7	50	110	90
Minor nonstatus offenses	65	66	68	7490	14930	19800

*Statistically significant difference within category ($p < .05$)

**Statistically significant difference within category ($p < .01$)

SOURCE: Delbert S. Elliott, Suzanne S. Ageton, David Huizinga, Brian A. Knowles, and Rachelle J. Canter, The Prevalence and Incidence of Delinquent Behavior: 1978-1980 (Boulder, CO: Behavioral Research Institute, 1983).

been shown to be related to delinquency in studies involving both official and self-reported illegal behavior (Johnstone, 1978; Lander, 1954; Shaw and McKay, 1942).

Despite questions raised by the earlier literature on self-reported offending and social class, and despite the distinction among different measures of social class noted above, we may expect an inverse relationship between social class and minor offending. An exception to this general pattern may be alcohol and illegal drug use. Research on marijuana use suggests that marijuana use may be higher among college students, among upper and middle class individuals, or among individuals who share both characteristics (Jessor, 1979; Kandel, 1980; Penning and Barnes, 1982). Otherwise, the research on alcohol and other illicit drug use reveals no clear pattern of differences by social class.

FBI UCR do not provide data on arrests by social class. Table 6 presents data on prevalence and offending rates by social class from the National Youth Survey for the same set of offenses examined in Tables 2 and 3. Social class is measured in the NYS by the Hollingshead two-factor index, a composite of the education and income of the principal wage earner in the household, and Upper and Middle classes were collapsed into a single category because of the small number of cases in the Upper class; see Elliott et al. (1983) for details. There are no statistically significant differences by social class in offending rates, and once again, sampling variation may mask real differences in offending rates. Although there is no real consistency across specific offenses, the overall pattern of differences indicates that offending rates vary inversely with social class, i.e., thatthe middle class has the lowest overall offending rate and the lower class the highest overall offending rate for minor offenses, but again these differences are not statistically significant.

For prevalence rates, the picture is even less consistent. Although there are more statistically significant differences in prevalence rates than in offending rates by social class, these differences vary in direction. For minor assaults, carrying a hidden weapon, and prostitution, the middle class has the lowest rates of prevalence and the lower class has the highest. For disorderly conduct, the relationship is reversed, and the middle class has the highest rates of prevalence and the lower class has the lowest. Marijuana use is most prevalent among those from a working class background (contrary to expectations from the literature on marijuana use and social class), and least prevalent among the lower class (again perhaps reflecting financial access to chemical recreation). Overall there is practically no difference in prevalence by social class (consistent with early self-reports), but the difference in offending rates by social class, although not statistically significant, is in the expected direction.

In a more detailed analysis in which controls were included for sex and race, Elliott and Huizinga (1983) reached the following conclusions, based on NYS data:

(1) Social class differences are more pronounced and consistent when offending rates (or incidence) are used instead of prevalence rates;

(2) Social class differences are more pronounced and consistent for serious offenses than for nonserious (minor) offenses (a result which may explain the absence of social class differences in Table 6);

(3) Social class differences are more pronounced and consistent for males than for females:

(4) Social class differences in prevalence and offending rates cannot be explained by race, although there does appear to be some interaction between social class and race (see also Elliott and Ageton, 1980); and

(5) The strength and consistency of social class differences appears to increase over time, as the NYS sample gets older.

The weak social class differences with respect to minor offending, particularly prevalence rates, as indicated in the present report, are consistent with the findings of Elliott and Huizinga (1983) and with past findings of little difference between social classes for minor delinquency. For those interested in the more detailed analysis, Elliott and Huizinga (1983) is attached as Appendix F to this report.

Urban-Suburban-Rural Differences in Minor Offending

Evidence collected by self-report studies on urban-rural differences includes research on various levels of population size and density, and crimes ranging from trivial to serious. Slocum and Stone (1963) compared farm and nonfarm areas, and found delinquency to be associated with the latter. Dentler and Monroe's (1961) study included a middle class suburb, a rural nonfarm area, and a farming town. No difference was found among the three areas, but it may be questioned whether any could have been expected, since none of the areas was truly urban. Clark and Wenninger (1961) studied a farm area, a lower class nonindustrial area, an upper class nonindustrial area, and an urban industrial area. They found the farm community to be the least delinquent of the four areas, in terms of serious rather than nuisance offenses.

Gold and Reimer (1975) provided information on the relationship between urban residence and crime. While urban location refers to the place in which the crime occurs, urban residence refers to the place in which the perpetrator of the crime lives. The relationship between residence and prevalence of delinquency tends to be stronger than that between residence and seriousness of delinquency. The evidence indicates a moderate, fairly consistent relationship between urban residence and frequency of delinquency. At the same time, the relationship between urban residence and seriousness of delinquency was neither strong nor consistent. Data from both official statistics and victimization surveys (Ennis, 1967; Skogan, 1976; U.S. Department of Justice, 1988) and from both earlier and more recent self-report studies all indicate that we should expect higher prevalence and offending rates in urban areas and lower prevalence and offending rates in rural areas. For substance use, according to Kandel (1980), the highest rates of alcohol and marijuana use occur in cities and suburbs, but the variation is higher among adults than among adolescents. Jessor (1979) concludes that marijuana use is higher in large metropolitan areas than elsewhere. These are the same patterns that exist for nondrug delinquency, and we may therefore expect the patterns for substance use and other illegal behavior to be similar.

Age-specific arrest rates are not available by place of residence (urban, suburban, rural), but we may obtain a rough estimate of arrest rates by assuming that the age structures of urban, suburban, and rural areas do not differ in any significant way.[3] Arrest rates (see Table 5) are consistently lower for rural areas than for urban or suburban areas. Suburban areas actually have slightly higher arrest rates than urban areas for vandalism, liquor law violations, and runaway, but the differences for vandalism and runaway are extremely small. For all of the other offenses in Table 5, urban areas have the highest arrest rates, a result anticipated on the basis of previous research. Recall that arrest rates refer to the location of the police agency making the arrest, not necessarily to the location of the crime or the residence of the offender.

For offending rates, the patterns are not as consistent. Note that offending and prevalence rates refer to the residence of the offender, not the place where the crime was committed. Marijuana use, the only offense for which the differences among the three types of area are statistically significant, has the expected pattern of high rates in urban areas and low rates in rural areas. For other offenses, the differences are not statistically significant and may or may not be in the expected direction. Overall, rates of minor offending appear to be highest, as expected, in urban areas, but unexpectedly lowest for suburban areas. This pattern would change if we included alcohol and drug use among minor offenses; then urban areas would have the highest and rural areas the lowest offending rates. Insofar as residential location may be associated with class or race, with suburban areas housing the more affluent white middle class and central cities having disproportionate numbers of poor minority group members, the urban-rural pattern could also be interpreted to reflect race and social class differences, but to confirm this would require analysis which is beyond the scope of the present report.

Prevalence rates more closely reflect the expected pattern of urban-suburban-rural differences. Two-thirds of the specific offense comparisons reveal statistically significant differences, and for all except two of the offenses for which there are statistically significant differences (alcohol use and drug use, both highest in suburban areas) urban areas have the highest prevalence rates. Rural areas have the lowest prevalence rates in all of the statistically significant comparisons (and in those which are not statistically significant, except for simple assaults and runaway). Again, these differences appear to be similar to the patterns of race and class differences, and a more extensive analysis to determine whether it is race, social class, or area of residence that accounts for these results may prove useful.

Costs of Minor Offending in Adolescence

The FBI provides estimates of the economic losses from Index offenses in its annual Uniform Crime Reports. Estimates of personal costs of crime are also available for the National Crime Survey (Shenk and Klaus, 1984), and for the offenses common to UCR and NCS these estimates agree reasonably well. For NCS, the number of offenses is higher and the median dollar loss from each offense is smaller. The NCS also provides estimates separately for medical expenses (for personal crimes of violence), losses resulting from property damage, and losses resulting from theft of property. Not included in the UCR and NCS estimates of the costs of serious crimes are lost productivity because of drug use or injury to victims, costs of private security devices and services, losses from tax revenues for illegal activities, and the cost of the criminal justice system.

We have no disaggregation of costs by age (are burglaries committed by adolescents as costly as those commiited by adults?), and no self-report data which would allow us to ascertain what proportion of offenses are committed by adolescents as opposed to adults. Arrest rates might provide some basis for making such estimates, but we do not know whether the likelihood of arrest varies by age (are adolescent burglars more or less likely to get caught than adult burglars?). Lacking a solid foundation upon which to base estimates of the costs of minor offending in adolescence, it seems best to admit ignorance, rather than to produce some "guesstimate" of the cost of minor offending in adolescence which may subsequently be reified and used as a basis--an unsound and inappropriate basis--for policy decisions. For minor offending, cost estimates of crime may vary considerably.

Even for adults, estimates of the costs of crime are highly variable. For 1980, Siegel (1983) reported FBI estimates of the cost of organized crime ($130 billion) and white collar crime ($100 billion). Conklin (1986) reported estimates from various sources that would suggest that the FBI figures reported by Siegel should be 50 percent lower than they were. The Bureau of Justice Statistics (1988) presented estimates of the total receipts of criminal activity, ranging from $27 billion (less than the estimates reported by Conklin for white collar crime alone) to $137 billion (little higher than the FBI estimate for organized crime reported by Siegel). Even allowing for the fact that the "costs" of crime may be much greater than the "receipts" generated by criminal activity, the latter range of estimates for receipts of criminal activity, a range of $110 billion, is terribly large. Even if age-specific data were available, it would seem best, based on these variations in estimates of the costs of crime (or the gains from crime) to avoid using them as a basis for estimating the costs of minor offending in adolescence.

Conclusion

Table 7 presents arrest rates for those under age 18[4] for selected years. Note that these arrest rates do not necessarily (or even probably) reflect changes in actual criminal behavior on the part of adolescents. Both victimization surveys (for adults and adolescents combined) and self-report surveys (for adolescents) indicate stability or declines in nearly all offenses, while arrest data (and data on offenses known to the police) indicate stable or increasing trends (Menard, 1987; Menard and Covey, 1988). The consistency between self-report and victimization data regarding trends in offending (for both minor and serious offenses, separately and together), and their inconsistency with arrest data (which do not attempt to directly measure illegal behavior, but instead measure the response of the criminal justice system, especially the police, to illegal behavior) suggest that arrest data are probably invalid indicators of changes in illegal behavior. Arrest data are nonetheless important for the information they provide on the burden borne by the criminal justice system, and for baseline data on initial contact with the criminal justice system, which data may be used to analyze flows through the criminal justice system.

The first part of the table presents rates of arrest for 1965 to 1985 at five-year intervals for those offenses for which arrest rates are available from the FBI Uniform Crime Reporting system. Rates of forgery and counterfeiting, embezzlement, and stolen property offenses appear to peak

TABLE 7

ADOLESCENT ARREST RATES, SELECTED OFFENSES AND SELECTED YEARS

	Rate of Arrests Under Age 18				
YEAR:	1965	1970	1975	1980	1985
OFFENSE					
Forgery and counterfeiting	.07	.09	.14	.17	.14
Fraud	.04	.06	.09	.14	.33
Embezzlement	.01	.01	.01	.02	.01
Stolen property	.15	.38	.64	.65	.52
Weapons offenses	.24	.35	.40	.45	.50
Sex offenses	.31	.21	.21	.21	.28
Gambling	.06	.03	.03	.03	.02
Narcotic drug laws/ drug abuse violations	.12	1.60	2.45	1.85	1.53

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	Rate of Arrests Under Age 18			
	Under age 18 (0-18)		Age 11-17	
YEAR:	1976	1987	1976	1987
OFFENSE				
Other assaults	1.06	1.38	2.40	3.58
Stolen property	.44	.42	.99	1.10
Vandalism	1.66	1.31	3.76	3.40
Weapons offenses	.30	.37	.67	.96
Prostitution	.04	.03	.09	.08
Liquor law violations	1.64	1.75	3.74	4.55
Narcotic drug law/ drug abuse violations	1.80	1.10	4.10	2.86
Drunkenness	.60	.27	1.36	.69
Disorderly conduct	1.72	1.28	3.91	3.33
Runaway	2.51	1.90	5.71	4.95
Minor nonstatus offenses	14.62	11.00	29.76	28.59
Total Part II	18.47	15.76	42.25	40.98

SOURCES: Federal Bureau of Investigation, *Age-Specific Arrest Rates and Race-Specific Arrest Rates for Selected Offenses 1965-1986* (Washington, DC: U.S. Government Printing Office, 1988); and data provided by Sharon Profiter.

sometime around 1980; rates of narcotic drug law or drug abuse offenses peak earlier, around 1975; rates of fraud and weapons offenses show a fairly consistent increase; and rates of gambling arrests show a fairly monotonic decrease. Arrests for sex offenses are highest for 1965 and 1985, and lower for the years in between. More detailed tables on age, sex, and race-specific arrest rates for these offenses may be found in Appendix G.

In the second part of the table, rates of those offenses considered earlier in this paper (offenses for which data are available from both UCR and the National Youth Survey) are presented. The first two columns present rates normed by the entire population under age 18 (consistent with the rates presented in the first part of the table). The second two columns presented rates normed only by the population aged 11-17 years, consistent with data in earlier tables and more realistic for estimating rates of arrests for adolescents. Rates of assaults, weapons offenses, stolen property, and liquor law violations have increased, and rates of other offenses have decreased, but to some extent these changes may reflect year to year fluctuations rather than real changes. Some of the changes probably reflect real changes in behavior. Decreases in arrests for drunkenness and narcotic drug law violations coincide with declining trends (since 1980) in alcohol and other drug use, as reported in the MTF data, and as reflected in NYS age-specific trend data, especially for marijuana use (Elliott et al., 1989; Menard and Huizinga, 1989). Decreased public drunkenness arrests coupled with increased liquor law violations may reflect changes in laws regarding alcohol use since 1976, particularly the increase in the legal drinking age from 18 to 21 in some states as a result of federal pressure.

The broader pattern is one of increases in arrests for minor predatory offenses (assaults, stolen property, weapons; vandalism is an exception here) and decreases in consensual offenses (except for liquor law violations). The net effect on the rate of arrests for both Part II offenses and minor nonstatus offenses (Part II offenses excluding curfew and loitering law violations and runaway) is small, a decrease of 3 or 4 percent. Essentially, the rate of arrests for minor offenses appears to be stable from 1976 to 1987, but this apparent stability masks the year to year variation that occurred between those two years. As Menard and Covey (1988) caution, comparisons based on only beginning and ending years may give misleading impressions of trends over time. Still, the lack of substantial change in rates of arrest, coupled with findings from self-report studies (including the MTF study of high school seniors during the same period as the arrest rates in Table 5), taken together suggest stability in the rates of minor offending, with perhaps some shift in the distribution over specific offenses of rates of minor offending. Because the adolescent population has declined in size, both absolutely and relative to the population as a whole (a result of the large "baby boom" cohorts passing out of adolescence and into adulthood), the stability of adolescent rates of arrest, offending, and prevalence may mean an absolute decline in the number of minor offenses committed by adolescents. Without good self-report data on adolescent rates of illegal behavior, however, this conclusion must remain speculative.

What these results have to offer in the way of policy implications is largely a litany of negatives. Despite changes in policy and political climate from 1967 (the first National Survey of Youth) to the recent past

213

(1987), rates of minor offending in adolescence appear to remain stable. Changes in drug use appear to be less an effect of changes in law or policy than changes in social climate and attitudes; the changes began for some substances as early as 1978, and seem to center on the period 1978-1980 (Bachman et al., 1987), before current drug policies initiated under the Reagan administration had been implemented. Availability of new, inexpensive forms of drugs such as "crack" cocaine and "ice" methamphetamines will undoubtedly produce short-term increases in those substances by adolescents, possibly as substitutes for other forms of the same drugs or for other drugs, but long term changes at present appear to be moving away from, rather than toward, increased substance use generally. The pattern observed between drunkenness and liquor laws in Table 5 may be reflective of a more general tradeoff: increased prohibition of use of a particular substance results in decreased use, but increases in offenses related to procurement of the substance (and, of course, increases in offenses by those for whom its use was once legal and has now become illegal).

Focusing on particular groups as defined by race, social class, or residence is unlikely to be effective in controlling the rates of minor offending in adolescence. Although there are some differences by race, class, and location, minor offending is widespread in the adolescent population and largely cuts across race, class, and residential lines. A focus on males (as opposed to females) as targets for intervention (e.g., drug education or prevention programs) may be somewhat more promising, but the evidence on trends suggests that it is females rather than males who have experienced increases in minor offending, particularly substance use. Any focus on one group to the exclusion of another runs the inherent risk of being viewed as discriminatory and unfair; the consequent loss of legitimacy may ultimately do more harm than good.

Here and elsewhere (Elliott et al., 1989; Farrington, 1986; Menard and Huizinga, 1989) we find evidence that individuals "age out" of crime. The transitory nature of criminal activity, particularly minor offending, has led some to suggest a "hands off" policy, on the assumption that intervention is likely to be counterproductive (e.g., Schur, 1973) and that the problem will take care of itself without intervention.

A more appropriate approach would be to design interventions based on empirically supported theories of delinquent and criminal behavior. Results in Elliott et al. (1989) suggest that variables such as age, race, social class, and residence affect delinquency only indirectly, and that their association with illegal behavior is the result of differential distribution of other variables (association and involvement with delinquent peers, conventional bonding including beliefs in conventional norms and involvement in conventional social institutions). The association between sex and delinquency is not completely explained by these other variables, but its influence is much weaker than that of delinquent peer group bonding. Sex moreover, is not a variable that can be ethically or practically manipulated for policy purposes; exposure and involvement with delinquent others may be. Similarly, age and race are not variables amenable to manipulation for public policy purposes. The recommendation that policy should focus on variables other than those demographic variables used in studying the epidemiology of minor offending in adolescence, then, is based on the limited association

215

between those demographic variables and illegal behavior, as indicated in the present report; the importance of other variables, as indicated in past research (see, e.g., Elliott et al., 1985 and 1989); and ethical and practical issues involved in focusing upon specific groups, to the exclusion of others, in the implementation of policies to prevent minor offending in adolescence.

NOTES

[1]Elliott et al. (1983) cite the case of one individual who, in one particular year, engaged in minor theft (less than $5) more than once a day. The person worked at a grocery store and stole oranges to eat on a daily basis. With a larger sample, the effects of such extremes might be dampened, but it does appear reasonable that in the real world individual frequencies of offending may vary dramatically from year to year as a result of opportunities to commit offenses (Cloward and Ohlin, 1960), or what Cohen and Felson call "routine activities" (Cohen and Felson, 1979), or what Hindelang, Gottfredson, and Garofalo call "lifestyles" (Hindelang, Gottfredson, and Garofalo, 1978).

[2]. In this report, the terms social class, social status, and socioeconomic status are used interchangeably. Marxian distinctions between bourgeoisie and proletariat, Weberian distinctions among class, status, and party, and other fine distinctions used in the stratification literature are largely ignored. The measure of social class employed is the Hollingshead two-factor index of social class (Hollingshead and Redlich, 1958; see also Bonjean, Hill, and McLemore, 1967). This combines the education and occupation of the principal wage earner into a single index, from which five social classes may be constructed. Because of low frequencies in some of the categories, the two classes have been combined to form the middle class and the bottom two classes have been combined to form the lower class in this report. The middle category has been retained as the working class.

[3]Actually, urban populations tend to have a younger age structure than their rural counterparts (Palen, 1987; U.S. Bureau of the Census, 1985). The difference, however, lies primarily in the larger proportion of young adults in the urban populations, and relatively smaller proportions of both the elderly and of children and adolescents. Insofar as urban, suburban, and rural populations do not have the same age structure, the differences between the estimates presented in Table 5 and actual rates are as likely to underestimate the urban-rural difference as to overestimate it. The arrest rates presented for urban, rural, and suburban areas in Table 5 should be regarded with caution; they are rough estimates, but in conjunction with data on self-reported prevalence and offending rates and non-age-specific data on differences among rural, suburban, and urban rates of arrest, they appear to reasonably reflect actual rural-urban differences in minor offending.

[4]. The use of arrest rates for those under age 18 in the comparison of 1976 and 1987 arrest rates was influenced by a change in the way the UCR reports age-specific arrests. In 1976, age 10 is separate from ages 11 and 12; in 1987, it is aggregated with ages 11 and 12 in reporting arrests. It seemed most reasonable to compare rates calculated in the same way, rather than raise the possibility that any change in the rates could be an artifact of a change in measurement from one time to another.

217

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224

QUESTIONNAIRE FORM 1-5 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Mari-juana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	15713	7261	7855	11713	1649	3720	4440	4855	2698	9291	5277	6535	3125	2223	3264	161
% of Weighted Total:	100.0	46.2	50.0	74.5	10.5	23.7	28.3	30.9	17.2	59.1	33.6	41.6	19.9	14.1	20.8	1.0
B07C: . . . during the last 30 days?																
1. 0 occasions	78.6	73.2	80.0	75.4	83.4	71.5	78.0	80.8	78.9	80.0	71.7	100.0	70.4	68.4	42.2	30.2
2. 1-2	9.3	9.7	9.0	10.0	6.9	10.6	9.5	8.3	9.2	9.2	9.4	-	18.7	14.7	15.3	13.8
3. 3-5	4.2	4.5	3.8	4.3	3.6	5.1	4.1	3.7	3.9	4.0	4.4	-	5.5	6.9	9.5	6.7
4. 6-9	2.8	3.1	2.4	2.9	1.8	3.8	2.8	2.2	2.3	2.3	3.6	-	2.7	4.2	7.1	10.1
5. 10-19	3.2	3.8	2.5	3.3	1.8	4.1	3.5	2.2	3.2	2.2	4.8	-	1.6	3.5	10.6	12.2
6. 20-39	1.9	2.5	1.2	2.0	1.2	2.2	2.1	1.4	2.0	1.2	2.8	-	0.4	1.3	7.3	8.2
7. 40 or more	2.1	3.2	1.0	2.0	1.4	2.8	1.9	1.5	2.6	1.1	3.5	-	0.6	1.0	7.9	18.7
Item 880 Subject A01c *N*	*15106*	*7051*	*7649*	*11445*	*1570*	*3543*	*4317*	*4648*	*2599*	*9098*	*5090*	*6535*	*3076*	*2161*	*3163*	*149*
B08: On how many occasions (if any) have you used LSD ("acid") . . .																
B08A: . . . in your lifetime?																
1. 0 occasions	92.8	91.3	94.4	92.2	98.4	92.3	92.0	96.0	90.9	94.6	90.7	100.0	100.0	96.0	72.3	33.8
2. 1-2	3.6	4.0	3.3	4.0	0.9	4.0	3.9	2.6	4.6	3.0	4.5	-	-	5.0	13.0	20.0
3. 3-5	1.5	1.9	1.1	1.6	0.2	1.8	1.8	0.8	1.9	1.1	2.0	-	-	-	6.6	13.3
4. 6-9	0.8	1.0	0.6	0.9	0.1	1.0	0.8	0.5	1.1	0.6	1.1	-	-	-	3.4	8.9
5. 10-19	0.6	0.9	0.3	0.7	0.1	0.6	0.8	0.3	0.8	0.4	0.8	-	-	-	2.5	7.0
6. 20-39	0.3	0.3	0.2	0.3	-	0.2	0.3	0.3	0.4	0.2	0.4	-	-	-	1.2	4.3
7. 40 or more	0.3	0.5	0.2	0.3	0.3	0.1	0.5	0.4	0.3	0.2	0.5	-	-	-	1.0	12.7
Item 890 Subject A01a *N*	*15337*	*7165*	*7753*	*11592*	*1612*	*3608*	*4365*	*4722*	*2641*	*9196*	*5198*	*6514*	*3113*	*2205*	*3218*	*156*
B08B: . . . during the last 12 months?																
1. 0 occasions	96.5	94.5	96.6	95.2	98.9	94.9	94.7	97.4	94.1	96.7	94.1	100.0	100.0	97.8	82.0	56.8
2. 1-2	2.7	3.2	2.2	2.9	0.7	3.4	3.2	1.4	3.4	2.1	3.6	-	-	2.2	10.8	14.6
3. 3-5	0.9	1.1	0.6	1.0	0.1	1.1	1.0	0.4	1.3	0.7	1.1	-	-	-	4.0	6.7
4. 6-9	0.4	0.5	0.3	0.4	*	0.3	0.4	0.3	0.6	0.2	0.6	-	-	-	1.5	8.9
5. 10-19	0.3	0.4	0.1	0.3	-	0.2	0.3	0.2	0.4	0.2	0.3	-	-	-	1.0	4.5
6. 20-39	0.1	0.2	0.1	0.1	0.1	*	0.2	0.1	0.2	0.1	0.2	-	-	-	0.4	4.5
7. 40 or more	0.1	0.1	*	0.1	0.1	*	0.1	0.1	*	*	0.1	-	-	-	0.2	4.0
Item 900 Subject A01b *N*	*15327*	*7157*	*7753*	*11580*	*1612*	*3608*	*4362*	*4718*	*2638*	*9192*	*5195*	*6516*	*3114*	*2204*	*3208*	*154*
B08C: . . . during the last 30 days?																
1. 0 occasions	98.3	97.8	99.0	98.3	99.8	98.1	98.2	98.8	97.9	98.9	97.6	100.0	100.0	99.7	93.3	77.4
2. 1-2	1.2	1.6	0.8	1.3	0.1	1.5	1.3	0.8	1.5	0.8	1.7	-	-	0.3	5.2	10.1
3. 3-5	0.2	0.3	0.1	0.3	-	0.2	0.3	0.2	0.4	0.2	0.4	-	-	-	1.1	2.5
4. 6-9	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	-	-	-	0.3	7.2
5. 10-19	*	0.1	-	*	-	0.1	*	*	*	*	*	-	-	-	0.1	0.3
6. 20-39	*	*	*	*	-	-	*	*	0.1	*	*	-	-	-	*	1.8
7. 40 or more	*	*	*	*	0.1	*	*	*	-	*	*	-	-	-	0.1	0.7
Item 910 Subject A01c *N*	*15323*	*7157*	*7750*	*11581*	*1610*	*3607*	*4361*	*4717*	*2637*	*9187*	*5196*	*6514*	*3114*	*2204*	*3205*	*155*
B09: On how many occasions (if any) have you used psychedelics other than LSD (like mescaline, peyote, psilocybin, PCP) . . .																
B09A: . . . in your lifetime?																
1. 0 occasions	94.3	93.6	95.1	94.0	98.3	89.9	95.3	97.1	93.7	96.5	92.9	100.0	100.0	94.8	79.1	42.7
2. 1-2	3.1	3.5	2.7	3.3	1.0	4.8	2.6	1.8	4.0	2.4	4.1	-	-	5.2	10.2	23.7
3. 3-5	1.0	1.1	0.7	1.0	0.4	1.9	0.9	0.3	1.1	0.8	1.1	-	-	-	4.3	8.2
4. 6-9	0.5	0.6	0.5	0.5	0.2	1.1	0.4	0.3	0.5	0.5	0.6	-	-	-	2.5	2.8
5. 10-19	0.4	0.5	0.4	0.5	0.1	1.0	0.3	0.2	0.3	0.3	0.5	-	-	-	1.7	6.4
6. 20-39	0.3	0.3	0.4	0.4	-	0.8	0.3	0.2	0.2	0.3	0.4	-	-	-	1.5	3.6
7. 40 or more	0.3	0.4	0.2	0.3	*	0.5	0.2	0.2	0.2	0.2	0.4	-	-	-	0.8	12.7
Item 920 Subject A01a *N*	*15284*	*7137*	*7741*	*11566*	*1603*	*3593*	*4348*	*4713*	*2631*	*9183*	*5174*	*6501*	*3098*	*2204*	*3198*	*154*
B09B: . . . during the last 12 months?																
1. 0 occasions	97.0	96.6	97.5	96.8	99.0	94.9	97.3	98.6	96.7	97.5	96.7	100.0	100.0	98.3	88.6	64.2
2. 1-2	1.8	1.9	1.6	1.9	0.6	3.1	1.6	0.9	1.9	1.6	2.0	-	-	1.7	6.5	19.1
3. 3-5	0.5	0.6	0.4	0.6	0.2	0.9	0.5	0.2	0.9	0.5	0.6	-	-	-	2.5	1.8
4. 6-9	0.3	0.3	0.2	0.3	0.1	0.5	0.3	0.1	0.3	0.2	0.3	-	-	-	1.1	3.9
5. 10-19	0.2	0.3	0.1	0.2	-	0.4	0.3	0.1	0.2	0.1	0.3	-	-	-	0.7	8.2
6. 20-39	0.1	0.1	0.1	0.1	*	0.2	0.1	0.1	0.1	0.1	0.1	-	-	-	0.4	1.5
7. 40 or more	*	0.1	*	*	*	0.1	*	0.1	*	*	0.1	-	-	-	0.1	1.3
Item 930 Subject A01b *N*	*15265*	*7126*	*7737*	*11551*	*1603*	*3589*	*4344*	*4707*	*2624*	*9177*	*5165*	*6501*	*3098*	*2201*	*3184*	*151*

*=less than .05 per cent.

QUESTIONNAIRE FORM 1-5 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	15713	7261	7865	11713	1649	3720	4440	4855	2696	9291	5277	6535	3125	2223	3264	161
% of Weighted Total:	100.0	46.2	50.0	74.5	10.5	23.7	28.3	30.9	17.2	59.1	33.6	41.6	19.9	14.1	20.8	1.0
B09C: . . . during the last 30 days?																
1. 0 occasions	98.7	98.6	98.9	98.7	99.5	98.2	98.5	99.3	98.9	99.0	98.5	100.0	100.0	99.0	95.6	80.7
2. 1-2	0.9	1.0	0.8	1.0	0.4	1.2	1.1	0.5	0.8	0.8	1.0	-	-	1.0	3.0	10.3
3. 3-5	0.2	0.2	0.2	0.2	0.1	0.4	0.2	0.1	0.1	0.1	0.2	-	-	-	0.6	4.3
4. 6-9	0.1	0.1	0.1	0.1	-	0.2	0.1	0.1	0.1	0.1	0.2	-	-	-	0.5	2.5
5. 10-19	*	0.1	*	*	-	*	*	*	0.1	*	0.1	-	-	-	0.1	1.9
6. 20-39	*	*	-	-	-	-	*	-	-	-	*	-	-	-	*	-
7. 40 or more	*	*	*	*	*	-	*	*	-	*	*	-	-	-	*	0.3
Item 940 Subject A01c *N*	*15263*	*7126*	*7735*	*11550*	*1602*	*3590*	*4342*	*4708*	*2624*	*9175*	*5166*	*6503*	*3098*	*2201*	*3180*	*152*
B10: On how many occasions (if any) have you used cocaine (sometimes called "coke", "crack", "rock") . . .																
B10A: . . . in your lifetime?																
1. 0 occasions	83.1	80.6	86.7	82.6	91.7	77.0	86.4	89.2	75.2	85.8	79.7	100.0	100.0	72.3	43.2	9.2
2. 1-2	6.9	7.6	6.1	7.0	4.4	8.4	6.4	5.4	8.6	6.4	7.5	-	-	27.7	12.9	21.7
3. 3-5	2.8	3.3	2.2	2.9	1.1	3.8	2.4	1.6	4.0	2.3	3.3	-	-	-	12.7	10.9
4. 6-9	1.8	2.4	1.3	1.8	0.9	2.4	1.4	0.9	3.6	1.6	2.1	-	-	-	8.4	7.7
5. 10-19	2.0	2.1	1.9	2.2	0.5	3.4	1.1	1.2	3.2	1.6	2.8	-	-	-	9.2	8.7
6. 20-39	1.3	1.3	1.2	1.4	0.8	1.9	0.8	0.6	2.4	1.0	1.7	-	-	-	5.7	7.3
7. 40 or more	2.0	2.4	1.6	2.0	0.6	3.2	1.4	1.1	3.1	1.4	3.0	-	-	-	7.9	34.6
Item 950 Subject A01a *N*	*15264*	*7165*	*7731*	*11589*	*1604*	*3575*	*4350*	*4707*	*2633*	*9168*	*5180*	*6485*	*3076*	*2204*	*3211*	*155*
B10B: . . . during the last 12 months?																
1. 0 occasions	87.3	85.7	89.1	86.7	94.2	82.1	89.9	92.9	80.0	89.6	84.3	100.0	100.0	85.9	52.2	32.6
2. 1-2	5.6	6.1	4.9	5.9	2.9	7.3	5.4	3.5	7.6	5.0	6.2	-	-	14.1	16.4	15.7
3. 3-5	2.4	3.0	1.9	2.6	0.8	3.3	1.9	1.2	4.5	2.0	3.1	-	-	-	11.3	7.0
4. 6-9	1.5	1.7	1.3	1.5	0.6	2.3	0.8	0.8	2.7	1.1	1.9	-	-	-	6.7	9.2
5. 10-19	1.4	1.4	1.3	1.5	0.5	2.3	1.0	0.8	2.1	1.2	1.9	-	-	-	6.1	12.7
6. 20-39	0.9	0.9	0.8	0.9	0.5	1.4	0.3	0.5	1.6	0.6	1.2	-	-	-	3.5	11.3
7. 40 or more	0.9	1.2	0.6	0.9	0.4	1.3	0.7	0.4	1.6	0.6	1.4	-	-	-	3.8	11.4
Item 960 Subject A01b *N*	*15239*	*7144*	*7728*	*11573*	*1600*	*3573*	*4342*	*4696*	*2627*	*9169*	*5177*	*6488*	*3076*	*2194*	*3193*	*154*
B10C: . . . during the last 30 days?																
1. 0 occasions	93.8	92.6	94.9	93.6	97.3	91.4	95.4	96.6	89.5	95.3	91.5	100.0	100.0	96.4	75.3	49.2
2. 1-2	3.5	4.1	3.0	3.6	1.2	4.8	2.7	2.0	5.8	2.8	4.5	-	-	3.6	13.5	17.6
3. 3-5	1.1	1.4	1.0	1.3	0.4	1.6	0.8	0.6	2.1	0.7	1.8	-	-	-	4.3	11.3
4. 6-9	0.7	0.8	0.5	0.7	0.5	0.9	0.5	0.3	1.1	0.5	0.9	-	-	-	2.3	6.8
5. 10-19	0.4	0.5	0.3	0.4	0.1	0.7	0.2	0.3	0.7	0.3	0.6	-	-	-	1.7	6.9
6. 20-39	0.2	0.2	0.3	0.2	0.3	0.3	0.1	0.1	0.4	0.2	0.2	-	-	-	0.8	5.0
7. 40 or more	0.2	0.3	0.1	0.2	0.2	0.3	0.2	0.1	0.3	0.1	0.4	-	-	-	0.9	3.4
Item 970 Subject A01c *N*	*15232*	*7141*	*7725*	*11589*	*1599*	*3568*	*4341*	*4697*	*2626*	*9163*	*5178*	*6488*	*3076*	*2193*	*3188*	*154*
B11: Amphetamines have been prescribed by doctors to help people lose weight or to give people more energy. They are sometimes called uppers, ups, speed, bennies, dexies, pep pills, and diet pills. Drugstores are not supposed to sell them without a prescription from a doctor. Amphetamines do NOT include any non-prescription drugs, such as over-the-counter diet pills (like Dexatrim) or stay-awake pills (like No-Doz), or any mail-order drugs. On how many occasions (if any) have you taken amphetamines on your own–that is, without a doctor telling you to take them...																
B11A: . . . in your lifetime?																
1. 0 occasions	76.6	78.7	74.8	73.9	91.7	77.0	74.0	79.3	75.3	80.1	70.4	100.0	100.0	49.8	26.7	21.6
2. 1-2	9.2	8.3	10.1	10.2	4.3	8.3	9.8	9.2	9.6	8.6	10.6	-	-	50.2	9.0	14.0
3. 3-5	4.4	3.9	4.9	4.9	1.5	3.9	5.0	3.7	5.3	4.0	5.2	-	-	-	20.6	7.5
4. 6-9	2.5	2.1	2.7	2.8	0.5	2.6	2.9	1.8	2.9	2.0	3.2	-	-	-	11.3	8.4
5. 10-19	2.5	2.5	2.6	2.9	0.9	2.4	2.9	2.3	2.6	2.0	3.3	-	-	-	11.6	5.8
6. 20-39	1.8	1.7	1.9	2.0	0.7	2.2	1.8	1.5	1.7	1.3	2.6	-	-	-	7.9	11.8
7. 40 or more	3.0	2.9	3.1	3.4	0.3	3.4	3.6	2.3	2.8	1.9	4.7	-	-	-	12.8	30.9
Item 980 Subject A01a *N*	*15286*	*7146*	*7770*	*11608*	*1606*	*3597*	*4345*	*4707*	*2638*	*9190*	*5191*	*6484*	*3078*	*2189*	*3222*	*157*

*=less than .05 per cent.

226

DESCRIPTIVE RESULTS: 1986

QUESTIONNAIRE FORM 1-5 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	15713	7261	7856	11713	1649	3720	4440	4855	2698	9291	5277	6535	3125	2223	3264	161
% of Weighted Total:	100.0	46.2	50.0	74.5	10.5	23.7	28.3	30.9	17.2	59.1	33.6	41.6	19.9	14.1	20.8	1.0
B11B: . . . during the last 12 months?																
1. 0 occasions	86.6	87.3	86.2	85.0	96.4	87.4	84.8	88.5	85.0	89.1	82.3	100.0	100.0	82.6	50.8	40.5
2. 1-2	6.2	5.9	6.4	7.0	1.7	5.2	6.7	6.0	7.2	5.5	7.8	-	-	17.4	17.2	12.5
3. 3-5	2.5	2.3	2.6	2.8	0.6	2.2	3.0	1.9	2.9	2.1	3.1	-	-	-	11.4	7.7
4. 6-9	1.7	1.8	1.6	1.9	0.8	1.8	2.2	1.2	1.6	1.3	2.3	-	-	-	7.5	12.4
5. 10-19	1.5	1.3	1.6	1.6	0.5	1.2	1.8	1.4	1.7	1.1	2.1	-	-	-	6.8	7.5
6. 20-39	0.8	0.7	0.9	1.0	0.1	1.3	0.9	0.5	0.8	0.6	1.3	-	-	-	3.5	9.6
7. 40 or more	0.7	0.7	0.6	0.8	-	0.8	0.8	0.5	0.8	0.3	1.3	-	-	-	2.8	9.9
N	15242	7121	7753	11579	1593	3588	4336	4688	2630	9175	5170	6484	3079	2169	3198	158
Item 990 Subject A01b																
B11C: . . . during the last 30 days?																
1. 0 occasions	94.5	94.9	94.2	93.9	98.7	94.1	93.8	96.6	94.2	96.0	91.8	100.0	100.0	96.2	78.2	57.9
2. 1-2	2.9	2.8	2.9	3.2	0.8	2.5	3.3	2.6	3.2	2.2	3.9	-	-	3.8	10.6	9.5
3. 3-5	1.2	0.9	1.5	1.3	0.5	1.5	1.6	0.8	1.0	0.8	2.0	-	-	-	5.4	11.6
4. 6-9	0.8	0.7	0.5	0.7	*	0.8	0.4	0.5	0.8	0.4	0.9	-	-	-	2.5	6.5
5. 10-19	0.5	0.4	0.5	0.5	-	0.8	0.5	0.3	0.5	0.4	0.7	-	-	-	1.9	10.3
6. 20-39	0.2	0.1	0.3	0.3	-	0.3	0.3	0.1	0.2	0.1	0.4	-	-	-	1.0	2.0
7. 40 or more	0.1	0.2	0.1	0.1	-	0.1	0.1	0.1	0.2	0.1	0.2	-	-	-	0.5	2.2
N	15230	7115	7747	11571	1592	3586	4330	4683	2631	9166	5168	6484	3078	2163	3190	155
Item 1000 Subject A01c																
B12: On how many occasions (if any) have you used quaaludes (quads, soapers, methaqualone) on your own–that is, without a doctor telling you to take them . . .																
B12A: . . . in your lifetime?																
1. 0 occasions	94.8	94.1	95.7	94.4	98.6	94.2	95.2	94.5	95.8	96.1	92.9	100.0	100.0	94.6	82.1	37.4
2. 1-2	2.8	2.9	2.6	3.1	0.7	2.9	2.4	3.0	2.6	2.3	3.5	-	-	5.4	8.8	12.8
3. 3-5	0.8	0.9	0.6	0.8	0.4	0.9	0.8	0.9	0.6	0.6	1.1	-	-	-	3.4	10.0
4. 6-9	0.6	0.6	0.4	0.6	0.1	0.8	0.4	0.6	0.4	0.3	0.9	-	-	-	2.3	8.7
5. 10-19	0.4	0.5	0.2	0.4	*	0.5	0.4	0.3	0.4	0.3	0.5	-	-	-	1.5	6.6
6. 20-39	0.4	0.5	0.3	0.4	-	0.4	0.4	0.5	0.1	0.2	0.7	-	-	-	1.1	14.0
7. 40 or more	0.3	0.4	0.2	0.3	0.1	0.4	0.4	0.2	0.2	0.2	0.5	-	-	-	0.9	10.4
N	15284	7162	7764	11609	1608	3590	4351	4712	2631	9187	5198	6479	3083	2203	3208	154
Item 1010 Subject A01a																
B12B: . . . during the last 12 months?																
1. 0 occasions	97.9	97.3	98.6	97.7	99.6	97.1	98.0	98.0	98.6	98.6	96.8	100.0	100.0	98.7	92.6	61.3
2. 1-2	1.2	1.6	0.8	1.4	0.3	1.6	1.2	1.1	0.8	0.9	1.7	-	-	1.3	4.2	12.7
3. 3-5	0.3	0.4	0.3	0.4	*	0.4	0.3	0.5	0.2	0.2	0.6	-	-	-	1.3	8.1
4. 6-9	0.3	0.3	0.2	0.3	*	0.5	0.3	0.2	0.2	0.2	0.4	-	-	-	1.0	7.2
5. 10-19	0.1	0.2	*	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	-	-	-	0.5	1.9
6. 20-39	0.1	0.2	0.1	0.1	-	0.2	0.1	0.1	0.2	*	0.3	-	-	-	0.2	7.0
7. 40 or more	0.1	0.1	*	*	-	0.1	0.1	*	-	*	0.1	-	-	-	0.2	1.9
N	15283	7157	7768	11604	1610	3592	4352	4711	2629	9188	5199	6481	3083	2201	3206	154
Item 1020 Subject A01b																
B12C: . . . during the last 30 days?																
1. 0 occasions	99.2	99.0	99.4	99.1	99.9	98.7	99.3	99.3	99.5	99.6	98.5	100.0	100.0	99.5	97.5	77.7
2. 1-2	0.4	0.4	0.4	0.5	0.1	0.7	0.3	0.4	0.4	0.2	0.8	-	-	0.5	1.4	8.0
3. 3-5	0.2	0.4	0.1	0.2	-	0.4	0.2	0.2	*	0.1	0.4	-	-	-	0.8	5.9
4. 6-9	0.1	0.1	*	0.1	-	0.1	-	0.1	0.1	*	0.1	-	-	-	0.1	4.9
5. 10-19	*	0.1	*	*	-	0.1	0.1	*	-	*	0.1	-	-	-	0.1	2.9
6. 20-39	*	*	*	*	-	*	*	*	-	*	*	-	-	-	*	0.7
7. 40 or more	*	*	*	*	-	*	0.1	-	-	*	*	-	-	-	0.1	-
N	15277	7158	7781	11601	1610	3592	4346	4709	2630	9184	5199	6480	3083	2199	3203	153
Item 1030 Subject A01c																
B13: Barbiturates are sometimes prescribed by doctors to help people relax or get to sleep. They are sometimes called downs, downers, goofballs, yellows, reds, blues, rainbows. On how many occasions (if any) have you taken barbiturates on your own–that is, without a doctor telling you to take them...																

*=less than .05 per cent.

QUESTIONNAIRE FORM 1-5 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	15713	7261	7855	11713	1649	3720	4440	4855	2698	9291	5277	6535	3125	2223	3264	161
% of Weighted Total:	100.0	46.2	50.0	74.5	10.5	23.7	28.3	30.9	17.2	59.1	33.6	41.6	19.9	14.1	20.8	1.0
B13A: . . . in your lifetime?																
1. 0 occasions	91.6	91.2	92.0	90.9	97.2	90.5	91.7	92.2	91.8	93.8	88.0	100.0	100.0	88.9	71.1	27.6
2. 1-2	4.1	4.0	4.1	4.4	1.9	4.0	3.9	3.9	4.8	3.1	5.8	-	-	11.1	10.7	23.5
3. 3-5	1.5	1.6	1.5	1.7	0.4	1.7	1.6	1.4	1.5	1.4	1.8	-	-	-	6.9	8.6
4. 6-9	0.8	1.0	0.7	0.9	0.2	0.9	1.0	0.7	0.7	0.6	1.3	-	-	-	3.6	7.9
5. 10-19	0.8	0.9	0.8	0.9	0.1	1.3	0.6	0.7	0.6	0.5	1.3	-	-	-	3.4	8.7
6. 20-39	0.5	0.6	0.4	0.5	0.1	0.6	0.5	0.5	0.4	0.3	0.7	-	-	-	1.9	9.2
7. 40 or more	0.7	0.8	0.5	0.7	0.2	1.0	0.7	0.6	0.4	0.4	1.1	-	-	-	2.4	14.4
Item 1040 Subject A01a *N*	*15221*	*7135*	*7740*	*11577*	*1603*	*3572*	*4336*	*4689*	*2624*	*9167*	*5175*	*6458*	*3070*	*2194*	*3187*	*158*
B13B: . . . during the last 12 months?																
1. 0 occasions	96.8	96.3	96.2	96.5	98.2	94.8	96.8	96.9	96.7	97.0	93.9	100.0	100.0	96.0	85.1	46.9
2. 1-2	2.2	2.4	2.0	2.4	1.3	2.3	2.3	2.2	1.9	1.7	3.1	-	-	4.0	6.7	23.4
3. 3-5	0.8	0.8	0.7	0.8	0.2	1.0	0.7	0.8	0.5	0.6	1.0	-	-	-	3.1	9.3
4. 6-9	0.6	0.7	0.5	0.6	0.1	0.8	0.5	0.6	0.3	0.3	0.9	-	-	-	2.5	4.1
5. 10-19	0.3	0.4	0.2	0.3	-	0.5	0.4	0.2	0.3	0.2	0.5	-	-	-	1.1	8.6
6. 20-39	0.2	0.1	0.3	0.2	-	0.3	0.2	0.3	0.1	0.1	0.4	-	-	-	1.0	1.7
7. 40 or more	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.2	-	-	-	0.5	5.9
Item 1050 Subject A01b *N*	*15212*	*7128*	*7738*	*11572*	*1603*	*3568*	*4338*	*4688*	*2617*	*9170*	*5170*	*6459*	*3070*	*2190*	*3182*	*157*
B13C: . . . during the last 30 days?																
1. 0 occasions	98.2	98.1	98.3	98.1	99.2	97.2	98.3	98.4	98.9	98.8	97.3	100.0	100.0	98.5	93.8	70.1
2. 1-2	1.1	1.2	1.0	1.2	0.8	1.5	1.0	1.1	0.8	0.9	1.5	-	-	1.5	3.6	14.3
3. 3-5	0.4	0.3	0.4	0.4	-	0.7	0.3	0.3	0.2	0.2	0.7	-	-	-	1.5	5.7
4. 6-9	0.2	0.2	0.1	0.2	-	0.3	0.2	0.1	0.1	*	0.3	-	-	-	0.6	3.4
5. 10-19	0.1	0.1	0.1	0.1	-	0.3	0.1	0.1	0.1	0.1	0.2	-	-	-	0.4	3.8
6. 20-39	*	*	*	*	0.1	*	0.1	-	*	*	0.1	-	-	-	0.1	0.3
7. 40 or more	*	*	*	*	0.1	0.1	*	*	*	*	*	-	-	-	*	2.4
Item 1060 Subject A01c *N*	*15205*	*7128*	*7732*	*11568*	*1601*	*3567*	*4337*	*4684*	*2616*	*9162*	*5170*	*6459*	*3070*	*2190*	*3175*	*157*
B14: Tranquilizers are sometimes prescribed by doctors to calm people down, quiet their nerves, or relax their muscles. Librium, Valium, and Miltown are all tranquilizers. On how many occasions (if any) have you taken tranquilizers on your own–that is, without a doctor telling you to take them...																
B14A: . . . in your lifetime?																
1. 0 occasions	89.1	89.6	88.7	88.1	96.5	88.1	89.8	88.9	89.6	90.3	87.3	100.0	100.0	78.4	65.8	36.0
2. 1-2	5.9	5.2	6.4	6.4	2.5	5.8	5.5	6.1	6.5	5.6	6.3	-	-	21.6	12.6	15.8
3. 3-5	2.0	2.0	2.0	2.2	0.6	2.2	1.9	2.0	1.9	1.9	2.1	-	-	-	8.9	11.2
4. 6-9	1.0	1.2	0.9	1.1	0.2	1.2	1.0	1.0	0.9	0.8	1.3	-	-	-	4.6	7.9
5. 10-19	0.9	0.8	1.0	1.1	-	0.9	1.0	0.9	0.7	0.8	1.0	-	-	-	4.0	5.4
6. 20-39	0.4	0.4	0.3	0.4	*	0.5	0.2	0.5	0.3	0.3	0.6	-	-	-	1.5	7.0
7. 40 or more	0.7	0.8	0.6	0.7	0.2	1.4	0.6	0.5	0.2	0.4	1.3	-	-	-	2.5	16.7
Item 1070 Subject A01a *N*	*15225*	*7151*	*7748*	*11586*	*1609*	*3576*	*4343*	*4688*	*2618*	*9179*	*5178*	*6466*	*3067*	*2191*	*3188*	*156*
B14B: . . . during the last 12 months?																
1. 0 occasions	94.2	94.1	94.2	93.5	98.4	93.6	94.5	93.7	95.2	94.9	92.8	100.0	100.0	92.1	79.8	54.5
2. 1-2	3.4	3.3	3.5	3.7	1.3	3.3	3.1	3.9	3.2	3.2	3.9	-	-	7.9	10.1	15.4
3. 3-5	1.0	1.0	1.0	1.1	0.2	0.9	1.2	0.9	0.8	1.0	1.0	-	-	-	4.3	6.3
4. 6-9	0.8	0.8	0.7	0.8	-	0.8	0.7	0.8	0.6	0.5	1.2	-	-	-	3.0	12.1
5. 10-19	0.4	0.5	0.3	0.4	-	0.7	0.3	0.4	0.2	0.2	0.6	-	-	-	1.6	3.6
6. 20-39	0.2	0.1	0.2	0.2	-	0.3	0.1	0.1	0.1	0.1	0.4	-	-	-	0.7	2.4
7. 40 or more	0.2	0.2	0.1	0.2	0.2	0.4	0.1	0.1	*	0.2	0.2	-	-	-	0.5	5.8
Item 1080 Subject A01b *N*	*15206*	*7143*	*7739*	*11576*	*1610*	*3574*	*4338*	*4684*	*2609*	*9170*	*5176*	*6467*	*3067*	*2182*	*3176*	*157*
B14C: . . . during the last 30 days?																
1. 0 occasions	97.9	97.9	98.0	97.7	99.2	97.2	97.9	98.0	98.7	98.3	97.3	100.0	100.0	98.5	92.4	72.4
2. 1-2	1.3	1.4	1.3	1.4	0.4	1.5	1.5	1.3	0.7	1.2	1.5	-	-	1.5	4.8	9.1
3. 3-5	0.5	0.4	0.5	0.5	0.1	0.6	0.3	0.5	0.5	0.3	0.7	-	-	-	1.7	10.2
4. 6-9	0.2	0.2	0.1	0.2	-	0.3	0.2	0.2	*	0.1	0.3	-	-	-	0.8	2.7
5. 10-19	0.1	*	0.1	0.1	-	0.3	*	*	0.1	0.1	0.2	-	-	-	0.3	3.8
6. 20-39	*	*	*	*	-	0.1	*	-	-	*	*	-	-	-	0.1	0.3
7. 40 or more	*	*	-	-	0.2	0.1	-	*	-	*	*	-	-	-	*	1.5
Item 1090 Subject A01c *N*	*15203*	*7142*	*7737*	*11574*	*1610*	*3574*	*4337*	*4682*	*2610*	*9168*	*5176*	*6467*	*3067*	*2182*	*3175*	*155*

*=less than .05 per cent.

715

QUESTIONNAIRE FORM 1-5 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Mari-juana Only	Few Pills	More Pills	Any Her-oin
N (Weighted No. of Cases):	15713	7261	7855	11713	1649	3720	4440	4855	2698	9291	5277	6535	3125	2223	3264	161
% of Weighted Total:	100.0	46.2	50.0	74.5	10.5	23.7	28.3	30.9	17.2	59.1	33.6	41.6	19.9	14.1	20.8	1.0
B15: On how many occasions (if any) have you used heroin (smack, horse, skag) . . .																
B15A: . . . in your lifetime?																
1. 0 occasions	98.9	98.6	99.3	99.1	99.3	98.7	99.1	98.8	99.2	99.3	98.4	100.0	100.0	100.0	100.0	-
2. 1-2	0.6	0.7	0.4	0.6	0.3	0.8	0.4	0.8	0.4	0.4	0.9	-	-	-	-	56.2
3. 3-5	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	-	-	-	-	10.8
4. 6-9	0.1	0.2	*	0.1	-	0.1	0.1	0.1	0.1	0.1	0.2	-	-	-	-	10.9
5. 10-19	0.1	0.1	-	*	-	0.1	0.1	0.1	0.1	*	0.2	-	-	-	-	7.3
6. 20-39	*	*	*	*	-	-	*	*	0.1	*	*	-	-	-	-	2.9
7. 40 or more	0.1	0.2	*	0.1	0.3	0.2	0.2	0.1	*	0.1	0.2	-	-	-	-	11.8
Item 1100 Subject A01a *N*	*15216*	*7155*	*7740*	*11594*	*1607*	*3565*	*4346*	*4691*	*2614*	*9179*	*5183*	*6460*	*3061*	*2186*	*3194*	*160*
B15B: . . . during the last 12 months?																
1. 0 occasions	99.5	99.3	99.8	99.6	99.6	99.3	99.6	99.5	99.5	99.6	99.2	100.0	100.0	100.0	100.0	50.8
2. 1-2	0.2	0.2	0.1	0.2	0.1	0.4	0.1	0.2	0.2	0.2	0.2	-	-	-	-	21.1
3. 3-5	0.1	0.1	0.1	0.1	-	0.1	0.1	*	0.2	0.1	0.2	-	-	-	-	9.6
4. 6-9	0.1	0.1	-	*	-	*	0.1	0.1	*	*	0.1	-	-	-	-	5.0
5. 10-19	*	0.1	*	*	-	0.1	*	0.1	-	*	0.1	-	-	-	-	4.2
6. 20-39	*	*	*	*	0.1	*	-	*	0.1	*	*	-	-	-	-	2.9
7. 40 or more	0.1	0.1	*	*	0.2	0.1	0.1	0.1	-	*	0.1	-	-	-	-	6.5
Item 1110 Subject A01b *N*	*15215*	*7154*	*7741*	*11593*	*1608*	*3564*	*4345*	*4690*	*2615*	*9179*	*5183*	*6461*	*3061*	*2186*	*3194*	*157*
B15C: . . . during the last 30 days?																
1. 0 occasions	99.8	99.6	99.9	99.9	99.8	99.8	99.8	99.7	99.8	99.9	99.6	100.0	100.0	100.0	100.0	78.2
2. 1-2	0.1	0.2	*	0.1	0.1	0.1	0.1	0.2	*	*	0.3	-	-	-	-	11.4
3. 3-5	*	0.1	*	*	-	0.1	-	0.1	*	*	0.1	-	-	-	-	3.9
4. 6-9	*	*	*	*	0.1	-	-	*	0.1	*	-	-	-	-	-	3.0
5. 10-19	*	*	-	*	0.1	-	*	-	-	-	*	-	-	-	-	0.8
6. 20-39	*	*	-	*	-	*	-	-	-	-	*	-	-	-	-	0.4
7. 40 or more	*	*	*	*	-	*	*	*	-	*	0.1	-	-	-	-	2.2
Item 1120 Subject A01c *N*	*15212*	*7153*	*7741*	*11595*	*1605*	*3563*	*4346*	*4689*	*2614*	*9177*	*5181*	*6461*	*3062*	*2186*	*3194*	*153*
B16: There are a number of narcotics other than heroin, such as methadone, opium, morphine, codeine, demerol, paregoric, talwin, and laudanum. These are sometimes prescribed by doctors. On how many occasions (if any) have you taken narcotics other than heroin on your own—that is, without a doctor telling you to take them...																
B16A: . . . in your lifetime?																
1. 0 occasions	91.0	90.1	91.9	89.9	96.9	90.6	90.4	92.2	90.6	92.1	89.2	100.0	100.0	87.9	69.3	23.7
2. 1-2	4.3	4.5	4.1	4.9	1.8	4.2	4.2	4.2	4.7	4.2	4.7	-	-	12.1	11.0	24.1
3. 3-5	1.7	1.9	1.6	2.0	0.5	1.4	2.2	1.4	1.7	1.5	1.9	-	-	-	7.5	11.4
4. 6-9	1.1	1.1	1.0	1.3	0.3	1.2	1.2	0.7	1.3	0.8	1.6	-	-	-	4.7	9.2
5. 10-19	0.9	1.1	0.7	0.9	0.2	1.2	0.9	0.7	0.7	0.7	1.1	-	-	-	3.6	11.3
6. 20-39	0.4	0.4	0.3	0.4	0.1	0.5	0.6	0.2	0.4	0.3	0.4	-	-	-	1.7	4.8
7. 40 or more	0.6	0.9	0.4	0.7	0.2	0.8	0.6	0.6	0.5	0.3	1.1	-	-	-	2.3	15.5
Item 1130 Subject A01a *N*	*15149*	*7138*	*7740*	*11567*	*1613*	*3552*	*4329*	*4672*	*2596*	*9149*	*5156*	*6421*	*3061*	*2187*	*3172*	*156*
B16B: . . . during the last 12 months?																
1. 0 occasions	94.8	94.1	95.4	94.1	98.4	94.3	94.2	95.8	94.6	95.7	93.3	100.0	100.0	95.8	80.2	52.4
2. 1-2	2.8	3.0	2.6	3.1	1.1	2.9	3.0	2.5	2.7	2.4	3.4	-	-	4.2	9.6	17.0
3. 3-5	1.1	1.3	0.9	1.3	0.1	1.2	1.4	0.7	1.0	0.9	1.4	-	-	-	4.7	9.3
4. 6-9	0.6	0.6	0.6	0.7	0.2	0.6	0.7	0.5	0.7	0.5	0.9	-	-	-	2.6	8.3
5. 10-19	0.4	0.5	0.3	0.4	0.1	0.4	0.5	0.2	0.5	0.3	0.4	-	-	-	1.6	3.5
6. 20-39	0.2	0.2	0.2	0.2	-	0.3	0.1	0.2	0.3	0.2	0.3	-	-	-	0.8	4.6
7. 40 or more	0.2	0.3	0.1	0.2	0.1	0.4	0.1	0.1	0.2	0.1	0.4	-	-	-	0.5	4.9
Item 1140 Subject A01b *N*	*15130*	*7129*	*7732*	*11557*	*1611*	*3549*	*4323*	*4665*	*2593*	*9141*	*5153*	*6424*	*3061*	*2177*	*3162*	*155*

QUESTIONNAIRE FORM 1-5 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	15713	7281	7855	11713	1649	3720	4440	4855	2698	9291	5277	6535	3125	2223	3264	161
% of Weighted Total:	100.0	46.2	50.0	74.5	10.5	23.7	28.3	30.9	17.2	59.1	33.6	41.6	19.9	14.1	20.8	1.0
B16C: . . . during the last 30 days?																
1. 0 occasions	98.0	97.6	98.4	97.8	99.1	97.5	97.8	98.6	98.0	98.4	97.3	100.0	100.0	99.0	92.4	73.0
2. 1-2	1.3	1.5	1.1	1.4	0.5	1.5	1.5	1.0	1.0	1.0	1.8	-	-	1.0	4.9	10.0
3. 3-5	0.4	0.4	0.3	0.4	0.2	0.5	0.5	0.1	0.5	0.3	0.3	-	-	-	1.3	7.5
4. 6-9	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	-	-	-	0.5	2.3
5. 10-19	0.1	0.2	0.1	0.1	-	0.2	*	0.1	0.3	0.1	0.2	-	-	-	0.6	2.6
6. 20-39	*	*	*	*	-	*	*	*	0.1	*	0.1	-	-	-	0.1	2.3
7. 40 or more	0.1	0.1	*	0.1	0.1	0.2	*	*	-	*	0.1	-	-	-	0.2	2.3
N	15123	7128	7727	11548	1611	3550	4317	4664	2593	9137	5150	6425	3061	2174	3158	153
Item 1150 Subject A01c																
B17: On how many occasions (if any) have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any other gases or sprays in order to get high . . .																
B17A: . . . in your lifetime?																
1. 0 occasions	84.1	80.4	87.5	82.7	91.9	85.0	83.5	86.2	81.8	85.8	81.0	95.8	85.2	77.7	65.5	52.0
2. 1-2	9.4	11.4	7.6	10.2	5.4	8.8	9.2	9.0	11.5	8.6	11.0	3.2	10.5	14.5	17.5	10.9
3. 3-5	2.8	3.3	2.3	3.1	1.0	2.4	3.3	2.5	3.2	2.5	3.5	0.5	2.2	3.7	6.8	16.5
4. 6-9	1.4	1.8	1.1	1.6	0.4	1.3	2.0	1.0	1.4	1.3	1.8	0.1	0.9	2.2	3.8	5.5
5. 10-19	0.9	1.3	0.5	0.9	0.4	0.9	0.9	0.6	1.0	0.8	1.0	0.1	0.6	1.1	2.4	2.4
6. 20-39	0.6	0.8	0.3	0.7	0.1	0.5	0.5	0.7	0.5	0.4	0.8	0.1	0.2	0.1	2.0	4.4
7. 40 or more	0.8	1.0	0.6	0.8	0.6	1.1	0.6	0.8	0.5	0.6	1.0	0.2	0.3	0.7	2.0	8.4
N	12178	5729	6233	9292	1304	2871	3468	3745	2095	7358	4213	5133	2424	1787	2583	133
Item 1160 Subject A01a																
B17B: . . . during the last 12 months?																
1. 0 occasions	93.9	92.2	95.3	93.2	97.3	94.4	93.3	94.3	93.4	94.8	92.3	98.7	94.9	91.7	85.5	73.8
2. 1-2	3.5	4.3	2.7	3.9	1.1	2.9	3.7	3.2	4.4	3.0	4.3	0.8	3.3	4.8	8.0	9.3
3. 3-5	1.1	1.4	0.9	1.3	0.3	0.8	1.7	1.0	0.8	1.1	1.2	0.2	0.9	1.9	2.4	6.1
4. 6-9	0.5	0.7	0.3	0.5	0.6	0.5	0.5	0.5	0.7	0.4	0.8	0.1	0.4	0.7	1.3	1.9
5. 10-19	0.4	0.6	0.3	0.5	0.2	0.5	0.4	0.5	0.3	0.3	0.6	0.1	0.2	0.5	1.4	1.4
6. 20-39	0.2	0.3	0.2	0.3	0.1	0.3	0.2	0.3	0.1	0.2	0.3	*	0.2	0.1	0.7	2.2
7. 40 or more	0.3	0.4	0.2	0.3	0.4	0.6	0.2	0.3	0.2	0.2	0.4	*	0.1	0.5	0.7	5.4
N	12161	5719	6225	9282	1303	2868	3462	3741	2091	7353	4206	5129	2420	1778	2583	133
Item 1170 Subject A01b																
B17C: . . . during the last 30 days?																
1. 0 occasions	97.5	96.6	98.1	97.3	98.5	97.3	97.6	97.3	98.1	97.9	96.7	99.5	97.9	96.8	94.3	83.
2. 1-2	1.6	2.1	1.2	1.8	0.9	1.5	1.7	1.8	1.1	1.3	2.1	0.3	1.7	2.2	3.4	5.
3. 3-5	0.5	0.6	0.3	0.5	0.2	0.5	0.4	0.5	0.5	0.4	0.5	0.2	0.1	0.4	1.1	5.
4. 6-9	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.3	*	*	0.2	0.6	1.
5. 10-19	0.1	0.1	0.1	0.1	-	0.1	*	0.1	0.1	0.1	0.1	-	0.2	*	0.2	0.
6. 20-39	0.1	*	0.1	*	-	0.1	*	0.1	-	*	0.2	-	*	0.2	0.1	0.
7. 40 or more	0.2	0.2	0.1	0.1	0.4	0.3	0.1	0.1	0.1	0.1	0.2	-	0.1	0.3	0.3	3.
N	12158	5716	6225	9281	1300	2867	3463	3738	2090	7350	4206	5128	2420	1778	2579	13
Item 1180 Subject A01c																

230

*=less than .05 per cent.

QUESTIONNAIRE FORM 2 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	3179	1481	1591	2367	338	756	902	960	541	1906	1054	1324	625	447	670	37
% of Weighted Total:	100.0	46.6	50.0	74.4	10.6	23.8	28.4	30.8	17.0	59.9	33.2	41.6	19.7	14.1	21.1	1.2
A18E: The U.S. does not need to have greater military power than the Soviet Union																
1. Disagree	34.8	39.4	30.1	33.7	44.5	31.4	33.8	44.0	24.8	31.5	39.0	32.8	38.3	32.6	36.2	36.4
2. Mostly disagree	21.0	20.0	22.3	21.2	21.0	20.0	19.2	22.1	23.5	21.1	21.4	19.9	20.0	22.5	23.8	15.8
3. Neither	17.9	14.9	21.1	18.2	16.0	18.5	17.0	15.4	23.5	18.5	17.5	19.2	16.8	17.4	17.1	16.4
4. Mostly agree	14.5	14.4	14.7	14.9	12.8	15.2	17.0	11.1	15.4	16.3	12.2	16.9	13.4	13.7	11.3	19.4
5. Agree	11.7	11.3	11.9	12.0	5.7	15.0	13.0	7.4	12.9	12.6	9.8	11.2	11.5	13.8	11.6	12.0
Item 6480 Subject H02,L03 *N*	*3108*	*1461*	*1557*	*2334*	*329*	*738*	*882*	*960*	*527*	*1880*	*1036*	*1304*	*618*	*441*	*653*	*35*
A18F: The U.S. ought to have much more military power than any other nation in the world																
1. Disagree	17.2	15.6	18.9	17.5	13.2	22.4	17.5	14.3	14.8	18.8	14.5	17.1	15.6	19.5	17.0	16.1
2. Mostly disagree	18.7	17.7	19.7	20.3	13.3	19.0	19.5	15.4	22.9	21.5	14.2	22.6	17.4	16.4	14.8	9.2
3. Neither	25.9	22.8	29.0	25.9	23.4	26.3	25.9	23.7	29.5	25.3	27.8	26.0	27.2	25.8	25.5	31.6
4. Mostly agree	18.6	19.6	17.6	18.3	21.1	16.1	18.5	20.5	18.7	17.5	20.5	15.9	20.6	17.1	22.6	16.4
5. Agree	19.6	24.3	14.7	18.1	29.0	16.2	18.6	26.1	14.1	16.9	22.9	18.3	19.2	21.2	20.1	26.6
Item 6490 Subject H02,L03 *N*	*3114*	*1484*	*1560*	*2335*	*333*	*739*	*885*	*960*	*530*	*1886*	*1035*	*1306*	*621*	*440*	*655*	*35*
A18G: Our present foreign policy is based on our own narrow economic and power interests																
1. Disagree	6.2	8.3	4.4	6.3	7.4	6.0	6.3	7.8	3.7	6.5	5.9	5.7	5.1	7.4	7.3	17.2
2. Mostly disagree	11.1	13.8	8.9	11.9	8.7	9.7	11.4	13.0	9.2	11.7	10.5	11.4	11.1	11.1	9.6	24.2
3. Neither	45.1	37.5	52.2	46.1	35.9	45.2	46.9	40.9	49.4	44.8	45.9	44.3	46.3	47.6	44.9	33.3
4. Mostly agree	24.8	26.5	23.1	25.1	24.4	25.0	24.4	25.4	23.8	24.9	24.3	25.9	23.7	24.1	24.3	18.4
5. Agree	12.8	14.0	11.4	10.7	23.6	14.1	11.0	12.9	13.8	12.0	13.4	12.7	13.8	9.9	13.9	6.8
Item 6500 Subject H02,L03 *N*	*3072*	*1454*	*1532*	*2311*	*324*	*720*	*877*	*949*	*526*	*1856*	*1026*	*1289*	*612*	*434*	*651*	*33*
A18H: Servicemen should obey orders without question																
1. Disagree	13.5	12.3	14.1	11.3	21.8	14.2	13.8	13.6	11.6	12.7	14.5	12.5	12.4	13.2	15.1	20.1
2. Mostly disagree	18.9	14.3	23.5	18.4	20.3	19.6	19.3	17.5	19.5	20.5	16.4	19.0	18.5	21.5	18.3	11.8
3. Neither	22.2	18.8	25.4	22.3	16.8	26.5	21.0	17.5	26.6	23.1	20.2	22.4	24.4	20.0	21.2	20.8
4. Mostly agree	28.6	31.5	26.5	30.6	25.5	23.8	28.5	33.3	27.3	28.8	29.1	30.4	28.1	29.3	27.2	16.8
5. Agree	16.8	23.1	10.5	17.4	15.6	15.9	17.4	18.0	15.0	14.9	19.8	15.7	16.5	16.0	18.3	30.5
Item 6510 Subject L03 *N*	*3109*	*1465*	*1556*	*2334*	*333*	*737*	*884*	*960*	*528*	*1883*	*1033*	*1306*	*621*	*438*	*655*	*35*
A19: This section deals with activities which may be against the rules or against the law. We hope you will answer all of these questions. However, if you find a question which you cannot answer honestly, we would prefer that you leave it blank. Remember, your answers will never be connected with your name. During the LAST 12 MONTHS, how often have you...																
A19A: Argued or had a fight with either of your parents																
1. Not at all	11.1	13.0	8.9	7.1	30.4	9.1	9.8	15.7	7.9	9.4	13.1	15.7	10.4	8.7	4.3	5.3
2. Once	8.7	10.4	7.1	7.1	17.1	8.5	6.9	10.5	9.2	8.4	8.6	10.5	7.9	6.7	5.7	3.4
3. Twice	11.8	12.8	10.4	10.9	15.3	14.9	10.7	9.2	12.7	11.1	12.4	13.1	9.5	10.8	11.3	1.8
4. 3 or 4 times	24.2	24.5	24.0	25.6	17.2	24.7	25.6	22.4	24.9	25.5	23.1	23.8	27.1	27.3	21.5	22.8
5. 5 or more times	44.3	39.2	49.6	49.3	19.9	42.9	47.1	42.3	45.4	45.6	42.8	36.9	46.1	46.5	57.2	66.7
Item 6520 Subject M03,S01 *N*	*3134*	*1467*	*1577*	*2345*	*336*	*737*	*894*	*967*	*536*	*1895*	*1040*	*1318*	*622*	*443*	*664*	*36*
A19B: Hit an instructor or supervisor																
1. Not at all	96.9	95.5	98.3	97.3	97.1	95.6	97.6	97.2	96.9	97.6	95.9	98.3	97.6	96.8	95.0	74.4
2. Once	1.9	2.7	1.3	1.7	2.4	3.1	1.2	1.8	1.8	1.5	2.7	0.9	1.4	2.9	3.2	13.7
3. Twice	0.6	1.0	*	0.6	-	0.8	0.9	0.3	0.3	0.6	0.6	0.5	0.4	-	1.0	5.0
4. 3 or 4 times	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.5	0.5	0.1	0.8	0.3	0.1	0.3	0.5	4.1
5. 5 or more times	0.2	0.4	0.1	0.2	0.2	0.2	0.1	0.2	0.5	0.2	-	0.1	0.5	-	0.2	2.9
Item 6530 Subject M02,S01 *N*	*3140*	*1471*	*1580*	*2351*	*336*	*743*	*894*	*967*	*536*	*1902*	*1041*	*1318*	*624*	*445*	*665*	*36*

—less than .05 per cent.

231

QUESTIONNAIRE FORM 2 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	3179	1481	1591	2367	338	756	902	980	541	1906	1054	1324	625	447	670	37
% of Weighted Total:	100.0	46.6	50.0	74.4	10.6	23.8	28.4	30.8	17.0	59.9	33.2	41.6	19.7	14.1	21.1	1.2
A19C: Gotten into a serious fight in school or at work																
1. Not at all	82.8	79.5	86.6	83.3	83.1	81.4	84.0	84.0	80.8	86.2	77.9	89.1	82.1	79.1	76.4	41.2
2. Once	11.3	12.6	9.4	10.9	10.3	12.7	9.6	10.9	13.0	9.8	13.3	7.1	11.6	15.2	14.5	42.8
3. Twice	3.4	4.6	2.2	3.7	2.9	4.3	3.5	3.0	2.6	2.1	5.2	2.0	4.0	3.6	5.1	5.4
4. 3 or 4 times	1.7	2.1	1.4	1.5	2.2	1.2	2.2	1.5	1.8	1.4	2.3	1.3	1.2	1.7	2.7	7.8
5. 5 or more times	0.9	1.2	0.4	0.6	1.5	0.4	0.8	0.7	1.9	0.5	1.4	0.5	1.1	0.5	1.4	2.8
Item 6540 Subject B07,C01,S01 N	*3138*	*1470*	*1581*	*2350*	*337*	*742*	*891*	*968*	*537*	*1901*	*1039*	*1318*	*624*	*447*	*663*	*36*
A19D: Taken part in a fight where a group of your friends were against another group																
1. Not at all	80.5	76.5	84.6	81.3	82.1	79.3	82.4	80.8	78.7	84.4	73.8	87.7	81.9	78.5	70.0	37.1
2. Once	11.3	12.4	10.2	11.3	10.4	10.0	11.1	12.6	11.3	9.4	15.0	7.7	11.7	13.1	16.2	21.5
3. Twice	4.4	6.1	2.7	3.8	4.3	5.2	4.1	3.7	5.2	3.6	5.9	2.5	4.1	4.7	7.3	19.5
4. 3 or 4 times	2.4	3.2	1.7	2.4	2.3	3.6	1.6	2.0	2.9	1.9	3.0	1.8	1.4	2.8	3.9	1.3
5. 5 or more times	1.3	1.7	0.8	1.1	0.9	1.9	0.9	0.8	1.9	0.7	2.3	0.3	0.9	0.9	2.5	20.6
Item 6550 Subject S01 N	*3141*	*1475*	*1579*	*2352*	*337*	*745*	*891*	*968*	*537*	*1900*	*1044*	*1323*	*622*	*447*	*665*	*36*
A19E: Hurt someone badly enough to need bandages or a doctor																
1. Not at all	88.9	81.0	97.0	89.8	88.8	88.5	88.3	90.0	88.7	92.2	84.0	93.5	91.0	87.9	82.5	52.9
2. Once	7.0	11.7	2.2	6.4	8.4	7.0	6.3	7.0	8.0	5.0	10.2	4.1	5.5	9.0	10.9	27.7
3. Twice	2.3	4.3	0.4	2.2	1.5	2.0	4.0	1.7	1.1	1.6	3.7	1.5	1.7	1.8	4.1	3.6
4. 3 or 4 times	0.9	1.5	0.4	0.9	0.9	1.3	0.8	0.7	1.1	0.7	1.2	0.8	0.6	0.6	1.3	12.0
5. 5 or more times	0.8	1.5	0.1	0.7	0.4	1.2	0.5	0.7	1.1	0.6	0.9	0.1	1.2	0.8	1.3	3.7
Item 6560 Subject S01 N	*3140*	*1473*	*1580*	*2353*	*337*	*744*	*891*	*968*	*537*	*1900*	*1044*	*1323*	*622*	*446*	*665*	*36*
A19F: Used a knife or gun or some other thing (like a club) to get something from a person																
1. Not at all	96.6	95.1	98.5	96.9	96.5	96.1	96.6	97.3	96.0	97.8	95.2	98.8	97.7	96.1	93.4	72.4
2. Once	1.8	2.8	0.8	1.8	2.2	1.1	2.2	1.8	2.1	1.3	2.8	0.4	1.2	3.1	3.5	16.4
3. Twice	0.6	0.8	0.3	0.5	0.3	0.8	0.8	0.3	0.6	0.5	0.7	0.3	0.6	-	1.6	2.5
4. 3 or 4 times	0.6	0.9	0.2	0.5	0.8	1.6	0.3	0.3	0.4	0.4	0.6	0.2	0.3	0.4	1.0	7.4
5. 5 or more times	0.4	0.5	0.1	0.3	0.2	0.4	0.1	0.4	0.9	-	0.7	0.2	0.2	0.5	0.5	1.3
Item 6570 Subject S01 N	*3142*	*1474*	*1581*	*2352*	*337*	*745*	*892*	*968*	*537*	*1901*	*1044*	*1323*	*622*	*447*	*665*	*36*
A19G: Taken something not belonging to you worth under $50																
1. Not at all	68.0	62.3	72.8	65.2	83.6	69.2	65.5	72.1	62.9	68.2	66.9	79.8	65.7	62.7	50.0	58.7
2. Once	16.2	18.5	14.4	17.5	8.0	15.5	15.6	15.9	18.7	16.3	16.8	11.6	17.3	19.1	22.8	13.2
3. Twice	6.9	7.2	6.7	7.7	4.3	7.0	9.0	4.0	8.4	7.2	6.1	3.8	8.1	8.7	10.9	7.8
4. 3 or 4 times	4.5	5.0	4.0	5.0	1.3	3.8	5.4	3.9	5.1	4.5	4.7	2.8	4.2	4.7	8.1	9.1
5. 5 or more times	4.4	6.9	2.2	4.6	2.8	4.6	4.5	4.0	4.9	3.9	5.4	1.9	4.7	4.8	8.2	11.2
Item 6580 Subject S01 N	*3126*	*1464*	*1576*	*2341*	*335*	*741*	*888*	*962*	*535*	*1891*	*1038*	*1319*	*617*	*444*	*661*	*36*
A19H: Taken something not belonging to you worth over $50																
1. Not at all	93.4	90.6	96.0	93.7	96.0	92.8	93.6	94.5	91.7	94.6	91.6	98.1	92.6	92.0	86.6	79.8
2. Once	3.5	4.6	2.5	3.2	2.7	3.9	3.2	2.6	4.7	3.4	3.5	1.2	4.5	3.3	7.1	4.8
3. Twice	1.2	1.9	0.7	1.2	1.2	1.2	1.3	1.1	1.5	0.8	1.9	0.4	0.9	2.1	2.8	1.5
4. 3 or 4 times	1.0	1.7	0.2	0.8	0.9	1.2	0.9	1.0	0.8	0.7	1.3	0.1	1.0	1.0	1.8	9.9
5. 5 or more times	0.9	1.3	0.6	1.1	0.2	0.8	0.9	0.8	1.3	0.5	1.6	0.2	0.9	1.6	1.6	4.1
Item 6590 Subject S01 N	*3131*	*1467*	*1578*	*2347*	*334*	*743*	*891*	*962*	*534*	*1893*	*1042*	*1321*	*621*	*444*	*661*	*36*
A19I: Taken something from a store without paying for it																
1. Not at all	72.1	67.2	76.8	71.2	80.8	70.6	71.7	76.9	66.1	74.2	67.8	85.7	67.6	67.3	55.0	39.8
2. Once	12.8	13.5	12.0	12.7	10.6	14.6	11.5	11.0	15.9	12.4	14.1	6.9	16.2	17.0	18.4	14.9
3. Twice	6.1	7.5	4.6	6.6	3.6	7.2	7.6	3.9	6.1	5.7	6.6	3.6	7.5	5.7	8.5	21.8
4. 3 or 4 times	4.4	4.9	4.0	4.7	2.9	4.1	5.1	3.2	6.0	4.4	4.5	2.3	4.1	5.0	8.4	6.7
5. 5 or more times	4.5	6.9	2.6	4.7	2.2	3.5	4.2	5.0	5.9	3.3	7.1	1.5	4.7	5.0	9.6	16.8
Item 6600 Subject S01 N	*3130*	*1470*	*1574*	*2343*	*336*	*741*	*890*	*965*	*534*	*1893*	*1041*	*1315*	*622*	*446*	*662*	*36*

232

QUESTIONNAIRE FORM 2 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	3179	1481	1591	2367	338	756	902	980	541	1906	1054	1324	625	447	670	37
% of Weighted Total:	100.0	46.6	50.0	74.4	10.6	23.8	28.4	30.8	17.0	59.9	33.2	41.6	19.7	14.1	21.1	1.2
A19J: Taken a car that didn't belong to someone in your family without permission of the owner																
1. Not at all	94.9	93.3	96.6	95.0	96.1	94.5	95.2	95.6	93.7	96.3	92.8	97.0	94.4	94.8	92.5	78.1
2. Once	3.1	4.1	2.1	3.2	2.3	3.5	3.1	2.6	3.6	2.3	4.7	2.1	3.8	2.6	4.3	11.4
3. Twice	1.1	1.2	1.0	1.0	1.2	1.1	1.2	0.7	1.6	0.9	1.2	0.7	0.9	1.8	1.3	6.5
4. 3 or 4 times	0.4	0.7	0.2	0.4	-	0.1	0.4	0.8	0.2	0.4	0.6	-	0.7	0.8	0.6	2.4
5. 5 or more times	0.4	0.7	0.1	0.4	0.4	0.8	*	0.3	0.9	0.1	0.7	0.2	0.2	-	1.3	1.6
Item 6610 Subject S01 *N*	*3134*	*1469*	*1579*	*2348*	*336*	*743*	*891*	*964*	*536*	*1900*	*1041*	*1320*	*624*	*446*	*664*	*36*
A19K: Taken part of a car without permission of the owner																
1. Not at all	94.4	90.6	98.0	94.2	98.0	93.7	95.1	95.7	91.9	95.9	91.6	97.5	94.4	93.5	90.6	60.1
2. Once	3.2	5.2	1.3	3.3	0.8	3.2	2.9	2.2	5.1	2.6	4.7	1.7	3.2	4.2	4.5	18.2
3. Twice	1.2	2.2	0.3	1.3	0.7	1.1	1.3	1.5	0.9	1.0	1.8	0.4	1.5	1.3	2.4	3.2
4. 3 or 4 times	0.6	0.9	0.4	0.5	0.1	0.8	0.7	0.2	0.9	0.3	1.1	0.1	0.4	0.8	1.1	9.3
5. 5 or more times	0.6	1.1	0.1	0.6	0.4	1.3	-	0.4	1.2	0.2	0.9	0.3	0.4	0.1	1.3	9.2
Item 6620 Subject S01 *N*	*3128*	*1464*	*1578*	*2344*	*335*	*742*	*889*	*962*	*534*	*1897*	*1042*	*1322*	*621*	*446*	*660*	*36*
A19L: Gone into some house or building when you weren't supposed to be there																
1. Not at all	75.5	70.6	80.1	74.2	82.6	75.0	72.9	79.1	74.0	76.2	74.6	84.2	72.7	67.6	67.0	53.4
2. Once	12.1	12.2	11.8	13.0	7.3	10.0	13.1	11.5	14.0	12.1	12.1	8.8	13.9	16.9	14.4	9.8
3. Twice	6.3	8.4	4.4	6.5	5.5	8.3	7.5	3.8	6.3	6.2	6.3	4.1	6.3	7.5	9.6	12.2
4. 3 or 4 times	3.1	4.3	1.9	3.3	1.7	2.7	4.3	2.3	3.2	2.7	3.6	1.5	3.4	4.8	4.2	11.9
5. 5 or more times	3.0	4.4	1.8	3.0	2.9	4.1	2.2	3.2	2.5	2.8	3.4	1.4	3.7	3.3	4.9	12.8
Item 6630 Subject S01 *N*	*3123*	*1463*	*1576*	*2339*	*337*	*740*	*890*	*968*	*535*	*1891*	*1042*	*1315*	*622*	*443*	*664*	*36*
A19M: Set fire to someone's property on purpose																
1. Not at all	98.0	96.7	99.4	98.4	96.2	96.3	99.0	98.8	97.3	98.6	97.6	99.2	97.9	99.2	96.2	84.4
2. Once	1.1	1.9	0.2	0.9	2.4	2.4	0.7	0.6	0.7	0.8	1.2	0.5	1.0	0.5	2.1	6.5
3. Twice	0.3	0.3	0.2	0.1	1.1	0.2	0.2	0.4	0.5	0.2	0.4	0.2	0.5	0.1	0.3	0.9
4. 3 or 4 times	0.3	0.4	0.1	0.2	0.1	0.1	-	*	1.3	*	0.4	-	0.2	0.3	0.8	-
5. 5 or more times	0.4	0.7	0.1	0.3	0.1	1.0	0.1	0.2	0.3	0.3	0.4	0.1	0.3	-	0.6	8.3
Item 6640 Subject S01 *N*	*3130*	*1466*	*1580*	*2344*	*335*	*742*	*892*	*960*	*536*	*1895*	*1043*	*1322*	*618*	*447*	*664*	*36*
A19N: Damaged school property on purpose																
1. Not at all	86.8	81.3	92.4	86.7	90.2	83.9	87.9	87.7	87.4	88.3	84.0	93.4	85.7	82.9	78.6	73.5
2. Once	6.8	9.0	4.8	6.8	5.4	7.7	6.4	6.4	7.2	6.8	7.4	3.5	7.9	9.8	10.7	6.0
3. Twice	3.0	4.6	1.6	3.2	3.0	3.8	2.6	3.3	2.2	2.4	4.3	1.7	3.2	5.6	4.0	1.0
4. 3 or 4 times	1.9	3.2	0.7	2.0	0.6	2.1	2.0	1.8	1.8	1.8	2.0	0.9	1.9	0.9	3.7	13.7
5. 5 or more times	1.4	1.9	0.6	1.2	0.7	2.4	1.0	0.9	1.4	0.7	2.3	0.5	1.3	0.9	2.9	5.7
Item 6650 Subject B07,S01 *N*	*3121*	*1462*	*1575*	*2337*	*336*	*739*	*889*	*959*	*533*	*1892*	*1040*	*1316*	*621*	*442*	*661*	*36*
A19O: Damaged property at work on purpose																
1. Not at all	94.8	91.0	98.3	94.7	96.9	93.1	95.1	95.8	94.6	95.0	94.4	97.4	94.9	93.1	91.2	85.4
2. Once	2.7	4.2	1.2	2.6	1.9	4.4	2.3	1.4	3.1	2.2	3.6	1.6	2.2	3.7	4.4	3.4
3. Twice	1.2	2.2	0.3	1.4	0.6	0.8	1.6	1.3	0.9	1.1	1.4	0.4	1.2	1.7	2.2	5.6
4. 3 or 4 times	0.8	1.5	0.1	0.8	0.8	1.0	0.8	0.6	0.9	1.0	0.4	0.4	1.3	0.5	1.1	3.3
5. 5 or more times	0.6	1.1	*	0.5	0.7	0.7	0.2	0.8	0.5	0.7	0.3	0.2	0.3	1.0	1.0	2.3
Item 6660 Subject C01,S01 *N*	*3130*	*1468*	*1579*	*2346*	*336*	*743*	*891*	*961*	*535*	*1897*	*1042*	*1323*	*623*	*444*	*661*	*36*
A19P: Gotten into trouble with police because of something you did																
1. Not at all	78.6	69.5	86.9	77.4	89.9	79.4	73.1	85.1	74.8	80.6	76.0	89.8	75.6	76.2	62.0	55.5
2. Once	13.2	16.8	10.1	13.9	7.0	12.4	16.3	9.0	16.6	13.0	13.4	7.2	15.9	15.6	21.1	17.4
3. Twice	5.1	8.0	2.2	5.3	1.6	4.6	6.3	3.9	5.5	4.4	5.4	2.3	5.9	6.0	8.8	7.3
4. 3 or 4 times	2.1	3.7	0.6	2.1	1.1	2.0	3.3	1.3	1.6	1.7	2.7	0.5	1.5	2.0	5.2	7.4
5. 5 or more times	1.2	2.1	0.2	1.2	0.3	1.7	1.0	0.7	1.5	0.3	2.5	0.2	1.0	0.1	2.9	12.3
Item 6670 Subject S01 *N*	*3131*	*1467*	*1580*	*2346*	*336*	*740*	*892*	*962*	*536*	*1899*	*1042*	*1321*	*623*	*446*	*662*	*36*

233

*=less than .05 per cent.

QUESTIONNAIRE FORM 2 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	3179	1481	1591	2367	338	756	902	980	541	1906	1054	1324	625	447	670	37
% of Weighted Total:	100.0	46.6	50.0	74.4	10.6	23.8	28.4	30.8	17.0	59.9	33.2	41.6	19.7	14.1	21.1	1.2
A20: The next questions are about some things which may have happened TO YOU. During the LAST 12 MONTHS, how often...																
A20A: Has something of yours (worth under $50) been stolen?																
1. Not at all	52.7	47.7	57.4	53.0	53.8	53.4	53.7	53.2	49.3	50.3	58.4	57.9	50.8	49.7	45.8	61.9
2. Once	28.6	29.8	27.7	28.2	27.8	28.0	29.3	27.3	30.7	29.6	26.4	28.1	30.3	27.8	29.1	17.3
3. Twice	11.2	12.3	9.8	11.1	10.7	12.6	10.3	10.5	12.0	12.5	8.4	7.5	11.8	14.5	15.4	11.9
4. 3 or 4 times	5.4	7.1	3.8	5.5	5.2	3.7	5.1	6.8	5.6	5.7	4.7	4.5	5.7	5.8	6.6	7.4
5. 5 or more times	2.1	3.1	1.3	2.1	2.5	2.4	1.7	2.3	2.4	2.0	2.1	2.0	1.3	2.3	3.2	1.4
Item 6680 Subject S03 *N*	*3124*	*1484*	*1574*	*2342*	*335*	*741*	*890*	*961*	*532*	*1896*	*1036*	*1316*	*623*	*440*	*664*	*36*
A20B: Has something of yours (worth over $50) been stolen?																
1. Not at all	82.5	77.9	86.9	84.2	79.8	82.8	82.6	82.5	82.0	82.4	83.6	86.1	82.4	80.2	78.2	80.8
2. Once	13.5	16.8	10.5	12.6	15.2	13.4	13.6	13.3	13.7	14.1	12.4	11.4	13.7	17.1	14.3	17.9
3. Twice	2.6	3.5	1.8	2.3	2.3	2.8	2.3	3.0	2.4	2.4	2.7	1.9	2.3	1.0	5.7	-
4. 3 or 4 times	1.0	1.3	0.7	0.7	1.7	0.4	1.2	1.1	1.6	0.9	1.2	0.4	1.3	1.5	1.5	-
5. 5 or more times	0.3	0.5	0.1	0.2	0.9	0.6	0.2	0.1	0.3	0.3	0.1	0.2	0.3	0.2	0.3	1.3
Item 6690 Subject S03 *N*	*3123*	*1462*	*1577*	*2342*	*335*	*741*	*888*	*961*	*534*	*1897*	*1036*	*1316*	*622*	*443*	*664*	*36*
A20C: Has someone deliberately damaged your property (your car, clothing, etc.)?																
1. Not at all	67.9	61.1	74.0	67.8	72.6	70.8	67.1	69.0	63.2	69.6	65.3	72.4	70.8	64.4	60.5	59.9
2. Once	21.7	25.2	18.5	22.1	18.5	18.9	23.3	20.1	25.5	19.9	24.5	19.9	19.6	24.1	24.4	20.5
3. Twice	7.0	8.8	5.5	7.3	5.5	6.6	7.0	6.8	8.0	7.5	6.4	5.4	5.8	8.4	10.2	7.0
4. 3 or 4 times	2.5	3.8	1.3	2.3	2.2	2.6	1.8	2.9	2.7	2.2	2.9	1.6	2.7	2.3	3.9	9.9
5. 5 or more times	0.9	1.0	0.7	0.6	1.2	1.0	0.8	1.1	0.7	0.7	0.9	0.7	1.1	0.8	0.9	2.7
Item 6700 Subject S03 *N*	*3122*	*1463*	*1575*	*2340*	*335*	*740*	*890*	*959*	*533*	*1896*	*1036*	*1316*	*623*	*442*	*663*	*36*
A20D: Has someone injured you with a weapon (like a knife, gun, or club)?																
1. Not at all	96.3	93.3	97.4	96.1	94.8	94.1	95.5	97.0	93.4	96.4	94.5	97.1	95.6	95.6	93.1	71.2
2. Once	3.3	4.6	1.9	2.6	4.1	3.8	3.3	2.0	5.0	2.4	4.0	2.1	3.6	3.3	4.5	14.2
3. Twice	0.9	1.2	0.6	0.9	0.8	1.4	0.9	0.5	0.8	0.8	0.7	0.5	0.7	0.4	1.6	10.1
4. 3 or 4 times	3.3	0.5	0.1	0.2	0.4	0.3	0.2	0.3	0.6	0.2	0.4	0.3	-	0.1	0.6	2.7
5. 5 or more times	0.2	0.4	*	0.2	-	0.4	0.1	0.2	0.3	0.1	0.4	-	0.1	0.5	0.2	1.8
Item 6710 Subject S03 *N*	*3126*	*1465*	*1577*	*2342*	*336*	*741*	*891*	*959*	*535*	*1898*	*1038*	*1318*	*623*	*444*	*663*	*36*
A20E: Has someone threatened you with a weapon, but not actually injured you?																
1. Not at all	84.2	79.4	89.2	85.8	78.4	83.2	86.2	83.7	83.1	87.6	79.6	90.1	82.8	81.2	78.2	56.6
2. Once	10.4	12.6	8.1	9.8	12.9	10.4	9.5	10.6	11.9	8.5	13.0	6.9	11.7	13.1	14.3	11.0
3. Twice	3.3	4.9	1.6	2.8	4.8	3.7	2.9	3.9	2.3	2.5	4.0	2.1	3.3	3.7	4.4	13.7
4. 3 or 4 times	1.1	1.7	0.4	0.7	2.1	1.0	0.8	1.0	1.8	0.9	1.3	0.5	1.5	1.2	1.5	2.5
5. 5 or more times	1.0	1.4	0.7	0.9	1.7	1.8	0.6	0.9	0.9	0.5	2.1	0.4	0.7	0.8	1.6	16.1
Item 6720 Subject S03 *N*	*3124*	*1462*	*1578*	*2342*	*335*	*738*	*891*	*960*	*535*	*1899*	*1036*	*1316*	*623*	*443*	*664*	*36*
A20F: Has someone injured you on purpose without using a weapon?																
1. Not at all	84.4	83.8	85.4	83.9	88.7	82.9	82.3	87.7	84.3	86.4	81.9	89.6	87.0	82.8	74.3	62.4
2. Once	10.1	10.4	9.5	10.7	8.3	10.6	11.9	8.3	9.4	9.4	11.2	7.5	9.6	11.3	14.8	11.0
3. Twice	2.9	3.2	2.5	3.1	1.5	3.0	3.1	2.3	3.2	2.7	2.8	1.8	1.9	3.7	5.2	6.0
4. 3 or 4 times	1.6	1.3	1.6	1.3	1.3	2.7	1.5	1.0	1.1	0.9	2.4	0.8	0.7	0.8	3.3	11.5
5. 5 or more times	1.1	1.3	0.9	1.0	0.3	0.7	1.2	0.7	2.0	0.7	1.8	0.3	0.6	1.4	2.4	9.1
Item 6730 Subject S03 *N*	*3125*	*1464*	*1577*	*2343*	*334*	*740*	*891*	*959*	*535*	*1899*	*1036*	*1319*	*622*	*442*	*664*	*36*

234

*=less than .05 per cent.

QUESTIONNAIRE FORM 2 1986	TOTAL	SEX		RACE		REGION				4YR COLLEGE PLANS		ILLICIT DRUG USE: LIFETIME				
		M	F	White	Black	NE	NC	S	W	Yes	No	None	Marijuana Only	Few Pills	More Pills	Any Heroin
N (Weighted No. of Cases):	3179	1481	1591	2367	338	758	902	980	541	1906	1054	1324	625	447	670	37
% of Weighted Total:	100.0	46.6	50.0	74.4	10.6	23.8	28.4	30.8	17.0	59.9	33.2	41.6	19.7	14.1	21.1	1.2
A20G: Has an unarmed person threatened you with injury, but not actually injured you?																
1. Not at all	71.7	65.6	77.8	71.3	72.4	73.0	71.4	71.7	70.5	73.6	68.8	80.1	70.3	64.3	62.5	48.3
2. Once	15.2	16.9	13.3	15.4	15.2	15.5	15.1	14.1	17.0	14.3	16.8	11.6	16.3	19.2	18.9	14.6
3. Twice	5.8	7.4	4.4	5.9	5.1	5.5	5.0	7.2	5.3	6.0	5.8	3.4	6.1	9.4	7.9	13.1
4. 3 or 4 times	4.0	5.3	2.6	4.1	3.7	2.1	4.7	4.9	3.7	3.5	4.7	3.0	4.8	4.3	5.0	7.6
5. 5 or more times	3.3	4.8	1.8	3.3	3.7	3.9	3.8	2.2	3.5	2.6	3.9	2.0	2.5	2.7	5.7	16.4
Item 6740 Subject S03 N	*3126*	*1464*	*1579*	*2343*	*336*	*741*	*890*	*960*	*534*	*1899*	*1038*	*1318*	*623*	*444*	*663*	*36*
A21: The following questions concern cigarettes, alcohol, and a number of other drugs. How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?																
A21A: Marijuana (pot, grass)																
1. Probably impossible	5.8	4.5	6.7	3.5	14.7	5.7	5.0	7.3	4.5	4.9	6.8	11.3	0.8	2.6	0.7	4.1
2. Very difficult	3.2	3.2	3.0	2.3	5.7	2.2	3.7	3.7	2.5	2.9	3.3	5.8	2.1	1.7	0.2	-
3. Fairly difficult	5.8	5.4	6.2	5.7	3.6	5.7	6.3	5.4	6.2	6.0	5.7	9.5	4.6	2.8	2.3	-
4. Fairly easy	30.4	30.3	30.9	31.8	22.8	28.1	31.2	32.4	28.5	32.3	26.6	36.1	30.8	29.7	19.8	12.8
5. Very easy	54.8	56.7	53.3	56.8	53.3	58.2	53.9	51.2	58.3	53.8	57.6	37.3	61.7	63.2	77.0	83.1
Item 6750 Subject A03a N	*3115*	*1461*	*1571*	*2334*	*336*	*741*	*891*	*954*	*529*	*1892*	*1037*	*1306*	*622*	*444*	*665*	*36*
A21B: LSD																
1. Probably impossible	22.7	20.2	24.3	18.1	41.7	23.9	21.3	24.8	19.6	20.2	26.5	27.2	25.3	19.3	13.3	6.1
2. Very difficult	20.5	20.4	20.4	20.9	17.4	21.9	19.2	20.6	20.5	21.7	17.5	19.4	22.4	23.8	18.9	8.3
3. Fairly difficult	28.3	28.9	28.3	30.9	19.7	26.1	30.5	29.0	26.4	28.3	29.2	27.9	28.3	29.9	29.3	21.7
4. Fairly easy	21.2	21.3	22.0	23.2	15.4	19.9	22.7	18.6	25.5	22.8	19.4	20.6	18.7	21.5	25.1	33.9
5. Very easy	7.3	8.2	5.1	6.9	5.7	8.2	6.3	7.0	8.0	7.0	7.5	4.8	5.4	5.5	13.3	30.0
Item 6760 Subject A03a N	*3091*	*1454*	*1557*	*2317*	*333*	*737*	*883*	*946*	*523*	*1877*	*1029*	*1296*	*614*	*442*	*661*	*36*
A21C: Some other psychedelic (mescaline, peyote, psilocybin, PCP, etc.)																
1. Probably impossible	26.8	24.8	28.1	22.3	46.2	25.3	25.5	31.1	23.2	23.8	31.2	30.1	33.2	23.1	16.9	8.0
2. Very difficult	24.8	24.9	24.8	26.5	15.6	24.8	24.8	23.5	27.5	25.3	24.0	25.0	22.7	26.5	24.9	30.9
3. Fairly difficult	23.5	24.7	22.8	25.4	18.4	21.4	22.3	25.6	24.7	25.1	21.4	22.2	23.3	24.2	27.3	8.0
4. Fairly easy	18.1	18.2	18.6	19.9	12.0	18.2	22.2	14.8	17.4	19.5	16.3	18.6	14.3	20.8	19.8	19.0
5. Very easy	6.8	7.4	5.6	5.9	7.9	10.4	5.2	5.2	7.2	6.3	7.0	4.2	6.5	5.4	11.1	34.1
Item 6770 Subject A03a N	*3080*	*1450*	*1549*	*2311*	*330*	*734*	*877*	*945*	*525*	*1867*	*1028*	*1293*	*616*	*437*	*658*	*36*
A21D: Amphetamines (uppers, pep pills, bennies, speed)																
1. Probably impossible	12.1	10.9	12.6	7.8	31.5	11.7	9.6	15.5	10.7	10.2	14.4	18.0	12.1	6.7	3.5	-
2. Very difficult	9.2	9.5	8.5	7.9	10.0	9.9	8.6	7.9	11.4	10.2	7.1	11.9	9.9	9.1	3.2	1.0
3. Fairly difficult	14.4	15.2	13.9	14.6	13.0	16.1	13.1	14.3	14.5	16.1	11.4	15.5	17.2	14.2	10.3	10.9
4. Fairly easy	33.8	34.4	34.0	37.0	24.3	33.7	34.0	32.7	35.9	34.7	33.0	32.8	38.6	36.1	31.2	23.4
5. Very easy	30.5	30.0	31.0	32.7	21.1	28.6	34.8	29.7	27.5	28.9	34.1	21.9	22.3	33.9	51.7	64.6
Item 6780 Subject A03a N	*3097*	*1454*	*1561*	*2322*	*335*	*736*	*883*	*951*	*527*	*1878*	*1033*	*1295*	*620*	*443*	*663*	*36*
A21E: Barbiturates (downers, goofballs, reds, yellows, etc.)																
1. Probably impossible	15.9	14.6	16.5	10.9	37.6	18.3	13.6	19.1	13.5	13.7	18.9	21.1	18.0	9.9	7.4	-
2. Very difficult	14.3	15.2	13.5	14.2	11.8	13.7	17.1	11.3	16.0	15.1	12.2	15.5	17.1	12.4	10.6	1.0
3. Fairly difficult	21.4	22.4	20.8	23.3	13.2	22.7	21.4	20.0	22.3	22.6	19.7	19.7	23.1	25.3	22.1	12.2
4. Fairly easy	27.9	26.3	30.2	30.2	21.8	26.7	25.3	29.3	31.8	29.0	26.9	28.4	26.9	28.8	28.5	22.7
5. Very easy	20.4	21.6	19.1	21.4	15.6	20.5	22.7	20.3	16.4	19.6	22.3	15.4	14.8	23.5	31.4	64.1
Item 6790 Subject A03a N	*3065*	*1448*	*1553*	*2313*	*330*	*734*	*881*	*946*	*521*	*1870*	*1028*	*1291*	*615*	*441*	*660*	*36*
A21F: Tranquilizers																
1. Probably impossible	16.0	16.6	15.0	11.4	37.0	15.4	14.7	18.8	14.3	13.2	20.4	18.2	20.5	11.2	9.9	3.8
2. Very difficult	12.9	14.2	11.8	11.9	15.7	13.9	13.2	11.0	14.1	12.3	12.9	12.4	14.7	11.5	13.1	9.0
3. Fairly difficult	19.9	20.8	19.5	21.4	12.2	19.2	21.5	18.3	21.3	20.4	19.4	19.2	20.4	18.6	22.5	16.6
4. Fairly easy	29.1	26.6	31.6	30.9	20.9	28.3	29.3	29.5	28.7	30.9	26.4	30.7	28.9	32.5	24.8	18.4
5. Very easy	22.1	21.7	22.2	24.5	14.2	23.2	21.2	22.4	21.6	23.2	20.9	19.5	15.4	26.2	29.8	52.1
Item 6800 Subject A03a N	*3084*	*1445*	*1558*	*2312*	*333*	*736*	*884*	*942*	*523*	*1873*	*1026*	*1292*	*615*	*440*	*661*	*36*

APPENDIX A

FBI PART II OFFENSES

Other assaults (simple): Assaults and attempted assaults where no weapon is used and which do not result in serious or aggravated injury to the victim.

Forgery and counterfeiting: Making, altering, uttering, or possessing, with intent to defraud, anything false in the semblance of that which is true. Attempts are included.

Fraud: Fraudulent conversion and obtaining money or property by false pretenses. Included are confidence games and bad checks, except forgeries and counterfeiting.

Embezzlement: Misappropriation or misapplication of money or property entrusted to one's care, custody, or control.

Stolen property; buying, receiving, possessing: Buying, receiving, and possessing stolen property, including attempts.

Weapons; carrying, possessing, etc.: All violations of regulations or statutes controlling the carrying, using, possessing, furnishing, and manufacturing of deadly weapons or silencers. Included are attempts.

Prostitution and commercialized vice: Sex offenses of a commercialized nature, such as prostitution, keeping a bawdy house, procuring, or transporting women for immoral purposes. Attempts are included.

Sex offenses (except forcible rape, prostitution, and commercialized vice: Statutory rape and offenses against chastity, common decency, morals, and the like. Attempts are included.

Drug abuse violations: State and local offenses relating to the unlawful possession, sale, use, growing, and manufacturing of narcotic drugs.

Gambling: Promoting, permitting, or engaging in illegal gambling.

Offenses against the family and children: Nonsupport, neglect, desertion, or abuse of family and children.

Driving under the influence: Driving or operating any vehicle or common carrier while drunk or under the influence of liquor or narcotics.

Drunkenness: Offenses relating to drunkenness or intoxication. Excluded is driving under the influence.

Liquor laws: State or local liquor law violations, except drunkenness and driving under the influence. Federal violations are excluded.

Disorderly conduct: Breach of the peace.

Vagrancy: Vagabondage, begging, loitering, etc.

All other offenses (except traffic): All violations of State or local laws except those listed above and traffic offenses.

Suspicion: No specific offense; suspect release without formal charges being placed.

Curfew and loitering laws: Offenses relating to violations of local curfew or loitering ordinances where such laws exist; under age 18.

Runaway: Limited to juveniles (under age 18) taken into protective custody under provisions of local statutes.

SOURCE: Adapted from the Federal Bureau of Investigation, Uniform Crime Reports (Washington, DC: U.S. Government Printing Office, annual).

APPENDIX B

SHORT-TERM TRENDS IN CRIME AND DELINQUENCY

(MENARD, 1987)

APPENDIX D

AGE, PERIOD, AND COHORT EFFECTS IN DELINQUENT BEHAVIOR

(MENARD AND ELLIOTT, 1990)

SELF-REPORTED OFFENDING, MATURATIONAL REFORM, AND THE EASTERLIN HYPOTHESIS*

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RUNNING HEAD:
AGE, PERIOD, AND COHORT EFFECTS ON SELF-REPORTED DELINQUENT BEHAVIOR

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ABSTRACT

The Maturational Reform hypothesis and the Easterlin cohort size hypothesis are used to specify models in which age, period, and cohort effects on self-reported crime and delinquency are estimated. Curvilinear effects, logarithmic transformations, and the distinction between prevalence and frequency of offending are considered. The Maturational Reform hypothesis is supported for general delinquency but not for serious (Index) delinquency, for which there appears to be a steady decline in the behavior with age. The Easterlin hypothesis is supported for both general and Index delinquency. Theoretical, methodological, and substantive implications of the results are discussed.

KEY WORDS: Age, Period, Cohort, Delinquency

SELF-REPORTED OFFENDING, MATURATIONAL REFORM, AND THE EASTERLIN HYPOTHESIS

1. INTRODUCTION

Since the development of methods for parameterizing age, period, and cohort effects (Mason et al., 1973) several attempts have been made to examine age, period, and cohort influences on crime, some with a particular focus on homicide, illicit drug use, or juvenile delinquency (Greenberg and Larkin, 1985; Maxim, 1985; Menard and Huizinga, 1989; O'Brien, 1989; Pullum, 1977; Smith, 1986; Steffensmeier et al., 1987). The studies by Maxim (1985), Menard and Huizinga (1989), O'Brien (1989), Smith (1986), and Steffensmeier et al. (1987) purported to examine the hypothesis that larger cohorts will experience greater prevalence and frequency of crime than smaller cohorts (Easterlin, 1987, pp. 97, 101-104). Prevalence of offending refers to the proportion or percentage of people in a population who commit an offense in a given time period. Mean frequency of offending refers to the number of offenses committed by the members of a population in a given time period, divided by the total population (including those who do not commit any offenses). Prevalence thus focuses on individuals and mean frequency focuses on events, but both have the same denominator. (In past studies the term incidence has been used where we now use mean frequency. Because incidence may have a different meaning in some disciplines, for example, number of new occurrences in the biomedical sciences, we have shifted here to the use of mean frequency of offending to describe the number of illegal acts divided by the total population).

In six of the seven studies, some measure of official age-and-period-specific criminality is used as the dependent variable. Pullum (1977) uses odds of arrest for those aged 15-24 from 1964 to 1973. Maxim uses the prevalence of referral to juvenile court (subjected to a weighted arcsin transformation) for males and females (analyzed separately) aged 7-15 from 1952 to 1981. Smith

(1986) uses age-and-period-specific homicide arrest rates for those aged 15-49 (in five year intervals) during the years 1952-1976 (also in five year intervals). Greenberg and Larkin (1985) use the logarithm of age-and-period-specific arrest rates for FBI Index offenses (murder, rape, aggravated assault, robbery, burglary, and larceny, considered separately and aggregated into violent, property, and total Index offenses) and drunk driving for seven U.S. cities for the years 1970-1980. Steffensmeier et al. (1987) use the logarithm of age-and-period-specific arrest rates for Index offenses except for rape, separately and aggregated into a single measure, for ages 15-24 from 1953 to 1984. They also use a derivative measure, proportional age involvement in Index crimes. O'Brien (1989) uses the logarithm of arrests for each of the Index offenses, considered separately, for five year intervals from 1960 to 1985 (and, in a replication, from 1962 to 1987) for the U.S. In the seventh study, Menard and Huizinga (1989) use self-report instead of official data on the prevalence and frequency (with and without logarithmic transformation) of alcohol, marijuana, and polydrug use (one or more of heroin, cocaine, amphetamines, barbiturates, and hallucinogens) for a national sample of seven birth cohorts aged 11-17 in 1976 and 18-24 in 1983.

The studies by Greenberg and Larkin (1985) and by Pullum (1977) were primarily methodological, and were not concerned with the Easterlin hypothesis or other explanations of the age, period, or cohort effects evident in the data. Pullum used a multiplicative model, and detected all three types of effects, age, period, and cohort, in his analysis. Greenberg and Larkin used a logistic regression model, and also found all three types of effects.

Maxim (1985), Smith (1986), and Steffensmeier et al. (1987) all used the additive, dummy variable model developed by Mason et al. (1973). For both males and females (between whom there appeared to be little substantive difference)

Maxim found age, period, and cohort effects in the prevalence of juvenile court referral, and the cohort effect was correlated with cohort size, consistent with the Easterlin hypothesis. Smith found that the influences of cohort and age effectively explained period trends in homicide, and that the correlation between cohort size and the cohort effect once again supported the Easterlin hypothesis. Steffensmeier et al., in contrast to Smith, found only a weak cohort effect for Index offenses, including homicide considered separately from the other offenses, and they concluded, based on the weakness of the cohort effect and its insignificant correlation with their measure of relative cohort size, that the Easterlin hypothesis was not supported.

Menard and Huizinga (1989) and O'Brien (1989) avoided both the use of the Mason et al. (1973) dummy variable regression model and the problem of linear dependence among age, period, and cohort (measured as year of birth) by introducing cohort size, which is not a linear function of age and period, directly into the regression equations. Rather than examining the correlation between the effects of dummy variable cohorts and cohort size (as in the studies using the Mason et al. technique), they were thus able to directly estimate the effects of cohort size on their dependent variables. Menard and Huizinga found statistically significant cohort size effects on prevalence of alcohol, marijuana, and polydrug use, and on frequency of alcohol and marijuana use, but not on frequency of polydrug use. O'Brien found statistically significant cohort size effects on some or all of the Index offenses, depending on which measure of relative cohort size he used. The existence of cohort size effects was most consistently supported for arrests for property crimes (robbery, burglary, larceny), or when a measure of relative cohort size based on the ratio of those aged 15-29 to those aged 30-64 (the same measure used in Easterlin, 1987) was used. Aside from the different dependent variables, Menard and

Huizinga (1989) and O'Brien (1989) differed in their operationalization of cohort size and their use of either dummy variables for age and period (O'Brien) or of explicitly, a priori nonlinear age and period effects (Menard and Huizinga). Both studies, however, found support for cohort size effects on illegal behavior.

2. THEORY

As Glenn (1977) explained, the separation of age, period, and cohort effects is problematic because of sampling variability, cohort attrition, and the confounding of age, period, and cohort effects. Rodgers (1982) and Greenberg and Larkin (1985) demonstrated that the estimated parameters for such models as the Mason et al. (1973) dummy variable regression model are highly sensitive to the specification of the models. The separation of age, period, and cohort effects may be facilitated, however, if we examine the data in light of two hypotheses: the Maturational Reform hypothesis and the Easterlin Cohort Size hypothesis.

The Maturational Reform hypothesis arises from the empirical generalization that illegal behavior increases in early adolescence, is highest in middle to late adolescence, then declines in early adulthood (Farrington 1986; Gold 1970; Hirschi 1969). This pattern holds true whether official statistics or self-report data are used (Blumstein, Cohen, Roth and Visher, 1986, pp. 41-42; Jensen and Rojek, 1980, pp. 70-71 and 102) and forms the basis for the analysis of age structure and crime (Chilton and Spielberger, 1971; Steffensmeier and Harer, 1987). For some offenses, such as drug use, the peak age may be later, around age 20 (Kandel, 1980; Menard and Huizinga, 1989), but the general pattern of increase, peak, and decline remains the same. A number of different explanations have been suggested for this apparent pattern of maturational reform or "aging out" of delinquency.

Matza (1964) suggested that the increase in delinquent behavior during adolescence arises from uncertainties about roles and misinformation about the attitudes of peers, a condition of normlessness which is resolved with the completion of the transition from childhood (through adolescence) to adulthood. Briar and Piliavin (1965) suggested that the declining illegal behavior of late adolescence and early adulthood is a result of increased commitment to conventional institutions and to behavioral conformity. Greenberg (1977) explained the variations in delinquency with age by a combination of elements of strain and control theory. Hirschi and Gottfredson (1983) asserted that age has a direct effect on crime, independent of other theoretically important variables. Regardless of which (if any) of these explanations we accept, the inverted U-shaped relationship of delinquency with age is to be expected.

The Easterlin hypothesis is applied to illegal behavior, alcohol and drug use, suicide, divorce, and unemployment—in short, to a wide range of social problems (Easterlin, 1987). Easterlin asserted that the size of a cohort tends to be inversely related to the relative income of that cohort (relative, specifically, to aspirations, which are largely determined and measured by Easterlin in terms of parental income). More generally, resources are scarcer for larger cohorts than for smaller ones (see also Harter, 1977; Jones, 1980). Resources include not only income (in adult life), but also classroom space, parental attention, and assistance from teachers in childhood. It is not only absolute cohort size which may be important, but also the size of the children's cohort relative to the size of earlier cohorts, particularly the cohort of the parents (Harter, 1977; Ahlburg and Schapiro, 1984).

The greater scarcity of resources for larger cohorts leads to higher levels of psychological and emotional stress, generated by the competition for (and, in proportionally more cases for larger cohorts, the failure to obtain) parental attention, employment, etc. This in turn leads to increases in a variety of social problems. The Easterlin hypothesis is thus a variant of strain theory, and Easterlin explicitly cited Durkheim (1951) and Merton (1968) regarding anomie. Easterlin was concerned with macrosocial variations, with differences between cohorts in aggregate rates, not with individual or microsocial patterns of behavior. In this respect, he has returned to the structural anomie theories of Durkheim and Merton, in contrast to the more social-psychologically oriented strain theories (Cloward and Ohlin, 1960) of the more recent past.

3. CRITERIA FOR TESTING THE EASTERLIN HYPOTHESIS

O'Brien (1989) suggested seven criteria which should be met in any adequate test of the Easterlin hypothesis. Four of these are straightforward, and deserve little comment, but two, as implemented by O'Brien, are questionable, and one is plainly wrong. Retaining the numbering used by O'Brien, the first criterion was that age-specific rates should be used. The offending rates in the present study, in all of the studies of the Easterlin hypothesis cited above, and in Greenberg and Larkin (1985) and Pullum (1977), are all both age-specific and period specific. O'Brien's fifth criterion was that data from the U.S. after World War II are most likely to show the Easterlin effect; again, the present study and all of the studies cited here met that criterion. The sixth and seventh criteria were that age and period effects should be separated from cohort size effects. This is done by some form of regression analysis in all of the studies cited. It is noteworthy, however, that in some studies, instead of entering cohort variables simultaneously with age and period variables (and thus partitioning any shared explained variance between the independent variables), age and period may be controlled by entering them first into the equation, then leaving cohort (or cohort size) to explain only the residual variation, that is, the variance left unexplained by age and period. This approach, used by Maxim

(1985), O'Brien (1989), and Steffensmeier et al. (1987) minimizes the effect of cohort on the dependent variable. For a conservative test of the Easterlin hypothesis that otherwise disregards age and period effects (except as control variables), this is appropriate, but if one wishes to compare the relative magnitude of age, period, and cohort effects this procedure produces biased (upward for age and period, downward for cohort) estimates of those effects. In the present study, all three variables are entered simultaneously into the equation, allowing us to examine the relative strengths of the age, period, and cohort effects.

O'Brien's fourth criterion is that relative cohort size affects cohorts throughout their life spans. This is true according to Easterlin (1987), but it does not mean (as O'Brien incorrectly suggests in connection with his Table 1, p. 62) that one cannot test the Easterlin hypothesis on some limited portion of that life span (as O'Brien himself does for ages 14-49). Easterlin (1987, pp. 4-5) suggests that the effects of cohort size may be most pronounced (and perhaps best tested) for individuals in the early adult years of the life cycle:

> The pressure or the absence of numbers is likely to be felt more in the early years of adulthood; but the effect, whether good or bad, is likely to follow a generation throughout its existence. In this sense, year of birth marks a generation for life.

The present study includes ages from early adolescence through early adulthood (ages 11-24), thus including those ages most appropriate for testing the Easterlin hypothesis as well as those most appropriate for testing the Maturational Reform hypothesis with respect to criminal and delinquent behavior.

O'Brien's third criterion is that cohorts should be based on groupings of individuals born in more than a single year. This clearly results from a misreading of Easterlin (1987), and the full text of the passage cited by

O'Brien in support of this criterion is as follows (Easterlin, 1987, p. 7, emphasis added):

> Throughout this book I use the term "generation" in much the same way as one would "college class"; the "generation of 1955" includes all born in that year.
>
> A generation, as I define it, is what "demographers"—specialists in the study of population—mean by a "birth cohort"; and I use "generation" and "cohort" interchangeably. Neither term needs to be confined to a single year. Just as we speak of the graduates of the sixties, so too can we speak of the generation or the cohort of a particular period, such as the baby boom cohort of the fifties. My interest is primarily in those born in periods of high birth rates, rather than in any high or low year.

See also Easterlin (1987, pp. 3, 8). Taking Easterlin's statements in context, it is apparent that (a) he is concerned with explaining the effects of relative or comparative cohort size, (b) that cohort or generation may be defined either in terms of single-year cohorts or in terms of multiple-year cohorts, and that Easterlin's theory is intended to apply to both definitions, and (c) that Easterlin's discussion of cohort size focuses on, but is not limited to, the comparison of the "baby boom" cohort of the 1950s and the "baby bust" cohort of the 1930s. In the present study, seven single-year cohorts (born 1959-1965) are used.

O'Brien's second criterion is that relative cohort size is the key independent variable in the Easterlin hypothesis, a position supported by Easterlin (1987), Ahlburg and Schapiro (1984), and Harter (1977). What exactly is meant by relative cohort size, or as Easterlin (1987, p. 3) describes it, "the comparative size of one's generation," is not altogether clear, particularly in the context of explaining behaviors such as juvenile delinquency which are initiated prior to entry into the labor force. Easterlin uses two measures. (a) With regard to labor force experiences, Easterlin considers the ratio of younger workers (ages 15-29) to older workers (ages 30-64). Variants of this measure have also been used by O'Brien (1989) and Steffensmeier et al. (1987) in their analysis of cohort effects on crime. There is a major problem with this type of measure in the context of analyzing illegal behavior, especially juvenile delinquency. First, Easterlin used the measure in a particular context (labor force experience) and for a particular purpose (comparison of younger, less skilled workers with older, more skilled workers), and the measure may not be generalizable to behaviors which occur before individuals enter the labor force. In other words, generalizing this measure to problems other than those for which it was originally used may not be valid. Illegal behavior is typically initiated long before one really enters the labor force, in early adolescence or even preadolescence (Farrington, 1983; Farrington, 1986). Labor force experiences are important for explaining a variety of adult behaviors,

> But entry into working life is not the first time that generation size makes its mark. In the course of their upbringing, both large and small generations have had significant clues as to what the future holds. For large generations, the typical story is one of crowding; for small generations, it is one of nurturance and special attention. At home, for large generations the pressures of sibling rivalry are high, and mom and dad are hard pressed to give time to each child's physical and emotional needs (Easterlin, 1987, p. 30).

Easterlin goes on to present another possible measure of relative cohort size, which he uses throughout his book, in the context of labor force experiences, and more generally with respect to family breakdown, social disorganization, etc. (Easterlin, 1987, p. 8, emphasis in original):

> At various places I speak loosely of generation size in terms of large or small "numbers." A careful reader, however, will note that generation size is identified here, not with the absolute number of births in a given year or period, but with the average birth rate, the number of births per thousand total population.

(See also Easterlin, 1987, pp. 16-19 for further support for the use of the birth rate as a measure of cohort size, including use in the context of labor force experience.) (b) A second option, then, would be to use the crude birth rate, as Easterlin does, as an indicator of relative cohort size. This has the advantage of being a ratio of younger to older cohorts (Easterlin, 1987, p. 17), and also of being applicable to individuals of any age.

(c) A third option would be to use absolute cohort size as an indicator of relative cohort size. Although not a direct measure of relative cohort size, absolute cohort size should be positively associated with relative cohort size (it is, after all, the numerator of the ratio that defines relative cohort size), and studies by Maxim (1985), Menard and Huizinga (1989), and Smith (1986) all suggest that absolute cohort size (number of births in the cohort's year of birth) has construct validity (Williamson et al., 1982, p. 72; Zeller and Carmines, 1980, pp. 80-84) within the context of the Easterlin hypothesis.

(d) A fourth option would be to use a cohort measure which could not be directly interpreted as a measure of relative or absolute cohort size, but which captured the impact of pressures on parental time resulting from larger numbers of children. Such a measure may be found, for example, in average parity or average birth order, a measure used with some success in the study of cohort differences in academic and intellectual achievement (Zajonc, 1976). In effect, this is a measure of mean family size at birth, a ratio of children to parents where parents are included on the basis of their membership in an event cohort (Graetz, 1987) defined in terms of parents having children in certain years (e.g., parents having children in 1959-1965, the birth cohorts included in the National Youth Survey). Although this is not properly a measure of cohort size as such, it does come closer to measuring the lack of access to parental resources (time, attention) which may be critical in the socialization process (Elliott et al., 1985; Ryder, 1965; Zajonc, 1976) and which may result in delinquent behavior. It is also consistent with the mechanism suggested by Easterlin (1987, p. 30, cited above; see also p. 99 with specific reference to social disorganization, including crime) by which cohort size affects behavioral outcomes prior to labor force entry.

In the present study, we consider options (b), (c), and (d), birth rate, absolute cohort size, and average parity. Option (a) is not considered here both for the theoretical reasons regarding its appropriateness, as detailed above, and for methodological reasons particular to the National Youth Survey. The National Youth Survey uses a multiple cohort sequential design (Baltes et al., 1979) in which the same cohorts are considered in each period, and ages vary from one period to another. This is in contrast to the typical design in previous studies, in which the same ages are considered in each period and cohorts (and thus the range of cohort sizes) vary from one period to the next. With ages constant from one time period to the next, an argument might still be made for the use of ratios of constant age groups, but the same measure does not work as well in a cohort sequential design because the full range of ages included in the "younger" or "older" cohorts may be present in one time period but not in another. We are inclined to view this as a weakness in the type of measure suggested in option (a)—note that the problem does not arise for any of the other indicators—but those inclined to accept the option (a) measure as appropriate will doubtlessly view the problem as a weakness in the cohort sequential design. We cannot resolve the issue of the relative merits of the cohort sequential design here, but the reader should be aware of the issue.

4. DATA

Data on age, period, and self-reported delinquency are taken from the National Youth Survey (NYS), a prospective, longitudinal study which has been described in detail elsewhere (Elliott and Ageton 1980; Elliott et al., 1983; Elliott et al., 1985). The NYS follows a nationally representative sample of youth, aged 11-17 in 1976, the first year for which data were collected, and aged 18-24 in 1983, the last year for which data are presently available. Sample retention has been fairly high for the NYS: of the 1,725 subjects first interviewed in 1976, 1,496 (87 percent) were still in the sample and completed interviews in 1983.Analysis of initial nonresponse indicated nc disproportionate nonresponse by age, sex, or race (Elliott et al., 1983) and analysis of subsequent respondent losses from 1976 to 1983 indicated that the sample distribution with respect to age, sex, race, social class, place of residence, and self-reported delinquency were not substantially affected by sample attrition (Elliott et al., 1989).

The NYS provides data on both prevalence and mean frequency of offending for a number of offenses. Prevalence refers to the proportion or percent of respondents who engage in a particular offense in a given time period. Prevalence is thus based on a count of offenders, not offenses, and individuals with one or one hundred offenses appear the same in the prevalence measure. Mean frequency of offending is the total number of offenses reported by all respondents (including those who report no offenses) divided by the total number of respondents. Because of the way it is constructed, mean frequency of offending (also called incidence in earlier reports from the NYS) is analogous to rates of crime as published by the Federal Bureau of Investigation in its annual Uniform Crime Reports or rates of victimization as published by the annual National Crime Survey, in which data are collected by the U.S. Census Bureau for the Bureau of Justice Statistics. Prevalence and mean frequency measure two separate aspects of offending: how many people are involved, and how much crime they commit. Each measure is interesting in its own right, but the two are not interchangeable and may produce different results (Blumstein et al., 1986; Elliott and Ageton, 1980). Together they produce a more complete description of criminal and delinquent behavior than either one alone would provide. Data on both prevalence and offending rates are available from the NYS for the years 1976-80 and 1983. All rates used in this study are both age-specific and period-specific, e.g., rates of burglary among 15 year olds in 1978. Data on cohort size are taken from the U.S. Bureau of the Census (1975; see also Easterlin, 1987; Zajonc, 1976) and include data on relative cohort size (crude birth rate in a year) for each year 1959-1965; absolute cohort size (total number of births in a year, divided by 1,000) 1959-1965; and average parity in each year 1959-1965.

5. MEASUREMENT

The use of official arrest and court referral data as indicators of delinquency or crime is one reservation we have about prior studies of age, period, and cohort effects on crime and delinquency. Despite attempts to reconcile official statistics (offenses known to police, arrests, court records) with victimization and self-report surveys (Elliott and Ageton, 1980; Gove et al., 1985; Hindelang, 1978), the evidence to date suggests that although cross-sectional correlations between sociodemographic characteristics and different measures of crime may produce similar results, "it is not, in general, safe to consider changes in official crime rates over time as changes in rates of offending" (O'Brien, 1985, p. 36). Neither Elliott and Ageton (1980), Gove et al. (1985), nor Hindelang (1978) provide any evidence that official statistics are valid indicators of trends over time, or comparable with victimization or self-report data in this regard. There is considerable evidence that they are not, some of it reviewed in O'Brien (1985). More recently, Menard and Covey (1988) found that National Crime Survey (NCS) victimization data and FBI Uniform Crime Reports (UCR) data on crimes known to police produced estimates which were not only statistically significantly different for all of the offenses except aggravated assault with injury, but also that over time UCR and NCS data were correlated no more than would be expected by chance ($p > .05$ for all offenses, $p > .10$ for all except robbery). Maxim (1985) found evidence in his data that official policies, perhaps in response to "saturation" of the juvenile justice system by large cohorts of youth, may have had an impact on trends in age-specific prevalence of juvenile court referral. Menard (1987) documented the existence of divergent period trends between official statistics (offenses known to the police and arrest rates) as compared to victimization and self report (prevalence and mean frequency) data. Indeed, Menard found that trends in rates of arrest (the usual measure in age-period-cohort studies) and rates of offenses known to the police may diverge from one another, even for homicide, a finding which further calls into question the validity of arrest statistics as indicators of criminal behavior.

At the very least, it would be helpful to supplement analyses of age, period, and cohort effects which use official arrest or court data with an analysis that uses self-report data instead. The lack of self-report data for adults over age 30 (actually we know of no self report data on a nationally representative sample of adults over age 27) admittedly limits our analysis to adolescence and young adulthood. Still, this allows us some comparison with studies using official statistics for similar age ranges, and allows us to examine those ages most relevant to the Easterlin and Maturational Reform hypotheses. In the present study, we use four indicators of self-reported illegal behavior. Prevalence and mean frequency of general offending are constructed from the general delinquency measure used by Elliott et al. (1985), excluding runaway and sexual intercourse as offenses. Although this measure includes serious offenses, it is dominated by relatively minor, but still illegal offenses. As indicators of more serious offending, we use prevalence and mean frequency of Index offending, as defined in Elliott et al. (1985), which includes aggravated assault (including gang fighting), sexual assault, robbery, burglary, larceny over $50, and motor vehicle theft Evidence that the Index offending scale is an appropriate measure of serious offending is provided by Elliott and Huizinga (1989). Based on a series of followup questions for Index offenses, they concluded that over 70 percent of the offenses reported in the Index offense scale in the NYS were appropriate and serious enough to evoke an official response, had they been detected.

One would think that the measurement of age should be straightforward, but that would be true only of we expected the effect of age on delinquency to be linear. The Maturational Reform hypothesis, however, leads us to expect a nonlinear relationship between age and offending, and does not specify at what age the prevalence and mean frequency of offending should reach its maximum. In the present analysis, we shall consider chronological age (age at last birthday) as one variable which may influence delinquency, but we shall also examine the results of replacing chronological age with the absolute deviation from the age of maximum offending. The absolute deviation refers to the absolute value of the difference between chronological age and age of maximum offending, or |(chronological age) - (age of maximum offending)|. Consistent with the

Maturational Reform hypothesis, the absolute deviation from age of maximum offending is, by definition, a U or J-shaped function of chronological age. If delinquency has a similar (or inverted) nonlinear relationship with chronological age, then delinquency should have a linear relationship with absolute deviation from age of maximum offending.

The measurement of time period as calendar year is straightforward. We have also considered the possibility of a nonlinear period relationship. The appropriate measures for cohort size are a little more problematic, as noted above. We have chosen to consider three of the four possible types of measures described earlier: birth rate, absolute cohort size, and average parity. Consideration will be given to whether the three measures produce similar results. If so, we may suggest that the three measures have concurrent validity (Williamson et al., 1982; Zeller and Carmines, 1980) which, if coupled with construct validity within the contexts of the Easterlin and Maturational Reform hypotheses, may allow us to infer that they are reasonably valid indicators of relative cohort size.

Although we use average parity or birth order as an indicator of cohort differences, the present study should not be confused with previous studies (for example, Biles, 1971; Lees and Newson, 1954; Nye, 1958; Rahav, 1980) of the relationship between individual birth order and individual levels of delinquent or problem behavior. Here, we are not concerned with the impact of birth order as such, or with whether middle-born children have higher or lower rates of illegal behavior than first-born or last-born children. Neither is the close relationship between individual birth order and individual family size (Menard, 1981, p. 197 and note 6) problematic in the present context. Our concern here is with aggregate cohort differences based on relative cohort size, for which average parity is one macrosocial indicator.

7. METHODS

In addition to our concerns regarding the use of arrest or court referral statistics and the measurement of relative cohort size in past studies, we question the use of the additive dummy variable model developed by Mason et al. (1973) in the studies by Maxim (1985), Smith (1986), and Steffensmeier et al. (1987). The model is inappropriate for testing the Easterlin hypothesis when data on cohort size are available. We are not echoing Glenn's reservations about the additive model for parameterizing age, period, and cohort effects, nor do we question Greenberg and Larkin's (1985) or Pullum's (1977) use of similar models, given the atheoretical context within which they were presented. Indeed, we regard the Mason et al. model as extremely valuable in the analysis of age, period, and cohort effects when there is no *a priori* specification of the form (linear, logarithmic, polynomial) that those effects may take or of the relevant variables (absolute or relative cohort size) for which those effects act as proxies. Instead we wish to reiterate a crucial point stated by Mason et al. (1976, p. 905):

> "What deserves special emphasis here is that in models of the sort considered in our article, age, period, and cohort are proxies for unmeasured mechanisms or variables. If these mechanisms or variables were measured and available for analysis, the estimability problem dealt with in our paper either would not occur or would be different. For example, if cohort size is held to be the variable which causes cohort differentiation in the context of a specific substantive problem, then, if size measurements can be constructed, it is unnecessary to include cohorts as such in the specification because the preferred variable is available. Under circumstances like this, the results of cohort analysis become less tentative, since the estimability problem as we described it is eliminated.

The replacement of proxies by the variables they index is a universal goal of research."

Mason et al. (1973) were concerned with the estimation of cohort effects when cohort itself, operationalized as year of birth, had to be entered into an analysis as an independent variable along with chronological age and period (year). As they indicate, for these measures, cohort = year - age. By contrast, relative or absolute cohort size and average parity bear no such fixed, linear relationship to year and age. For that matter, the absolute deviation of age from some specified age also bears no such fixed, linear relationship to cohort and year. Use of either cohort size or absolute deviation of age eliminates the problem of estimability that Mason et al.'s method was designed to solve. Instead of estimating 39 (Pullum), 54 (Smith), 77 (Maxim), or 79 (Steffensmeier et al.) dummy variable parameters for each dependent variable, and losing some information when we impose constraints on the model to make it estimable, we really need estimate a maximum of three parameters per dependent variable (12 if we consider all possible combinations of age, period, and cohort size effects) to test the Easterlin or Maturational Reform hypotheses.

We shall proceed by assuming a linear, additive relationship between our four dependent variables and our three independent variables. The assumption of additivity is no different from that made by the Mason et al. dummy variable model. The assumption of linearity is tested to some extent by examining (a) the explanatory power of the model, that is, how well does a linear model explain each of the dependent variables, (b) the effect of taking the natural logarithm of the dependent variables, (c) the effect of substituting the absolute deviation from the age of maximum offending for chronological age, consistent with the Maturational Reform hypothesis, and (d) the effect of replacing calendar year in the regression equations with the absolute deviation from the calendar year of the year of maximum offending, |(calendar year) - (year of maximum offending)|. The use of the natural logarithm in (b) has some precedent (O'Brien, 1989; Steffensmeier et al., 1987) and seems appropriate, given the skewness of some of the data, especially with regard to mean frequency of offending. We use ordinary least-squares regression to calculate the magnitude and statistical significance of age, period, and cohort size effects, and consider reduced models which include only statistically significant regression coefficients. Principal components tests for collinearity and the Durbin-Watson test for autocorrelated error are also considered.

7. RESULTS

Table I contains the zero-order correlations between the independent and dependent variables considered in this analysis. The dependent variables include prevalence and mean frequency of general delinquency or crime (GDCP and GDCF) and Index offending (INDP and INDF) and the natural logarithm of each (LGDCP, LGDCF, LINDP, and LINDF). For the independent variables, age is represented by chronological age and by the absolute deviation of chronological age from age 15 and from age 16. Preliminary inspection of the age-and-period-specific rates indicated that offending was highest at ages 15 or 16, depending whether prevalence or mean frequency of general or Index offending was the criterion. Other ages were also considered, including age 15.5 (between ages 15 and 16), but these other ages failed to improve the correlations or the fit of any of the regression models. For each of the dependent variables in Table I, the strongest zero-order age-offending relationship is with age 15 or 16, rather than with chronological age, a finding consistent with previous studies of the relationship between age and delinquency. All three, chronological age and absolute deviations from ages 15 and 16, are retained for further analysis.

For period, the peak year for age-specific offending rates appears to have been 1977. Because the years considered in this study range from 1976 to 1983, the use of absolute deviation from the second-earliest year in the study has, predictably, no apparent impact on the results. Absolute deviations from years 1978, 1979, and 1980 were also considered, but calendar year consistently had the strongest relationship with self-reported offending. As a result, only linear period trends involving calendar year are considered in the remainder of this paper. Finally, with the exception of the frequency of general offending, both measures of cohort size have the weakest correlations with the dependent variables. In general, average parity is more closely related than either relative or absolute cohort size to the dependent variables. Notice also that some of the correlations between absolute or relative cohort size and delinquency are unexpectedly negative.

(Table I about here)

Table II presents the variance explained in each of the dependent variables by regression equations which include different combinations of the independent variables. Equations for which all of the regression coefficients are statistically significant with probability $\leq .050$ are so identified in Table II. Principal components tests for collinearity (Chatterjee and Price 1977) indicate no problem of collinearity for any of the combinations of variables in Table II except when chronological age, period, and crude birth rate are included in the same equation. The effect of this is to produce unstable regression coefficients in those equations and to render problematic the technical interpretation of the coefficients, but this affects only one row (age + year + CBR) in Table II. Substantively, it appears to make no difference.

For purposes of this study, the best-fitting equation or best-fitting model for each dependent variable is defined as that equation (a) for which all of the regression coefficients are statistically significant with probability $\leq .050$, and (b) which explains the greatest proportion of the variance in the dependent variable. With this definition, we are able to evaluate hypotheses in an absolute sense (is there a statistically significant nonlinear age effect?) and in a relative sense (does the nonlinear age effect explain offending rates any better than a linear age effect?) as well.

(Table II about here)

Before focusing on the effects of logarithmic transformation of the dependent variables, nonlinear age effects, or absolute as opposed to relative cohort sizes, notice the magnitude of the largest R^2 for each of the dependent variables. Without any measure of prior delinquency in the equations, the explained variance is as high as 86 percent for general offending prevalence, 41 percent for the natural logarithm of the mean frequency of general offending, 72 percent for the natural logarithm of prevalence of Index offending, and 53 percent for the natural logarithm of the mean frequency of Index offending. Bear in mind that the dependent variables are aggregate, not individual rates (mean age-and-period-specific rates), but consider also that the range of cohort sizes (with only seven cohorts), ages (11-24), and time periods (1976-1983) are truncated subsets of the full range of values for each of the independent variables.

It is evident from Table II that taking the natural logarithm of the dependent variable has no impact on the explanatory power of the equation for the prevalence of general delinquency, and little impact on the equations for the mean frequency of general delinquency or the prevalence of Index offending, but it doubles the variance explained in the mean frequency of Index offending.

This suggests that the use of a simple linear model may be inappropriate for some variables, particularly mean frequencies of offending. For prevalence of both general and Index offending, it does not appear to matter a great deal. For all of the dependent variables, use of logarithmic transformations appear to make little or no difference in the structure of the best-fitting model. The exceptions are for the prevalence of general and Index offending, for which, in the logarithmically transformed model only, a period effect appears to be as plausible as a cohort size effect or a combination of cohort size and period effects.

Also evident from Table II is the fact that the inclusion of average parity rather than relative or absolute cohort size in the best-fitting equations for which cohort size effects are statistically significant increases the amount of variance explained in the dependent variable. This is consistent with the zero-order correlations in Table I, and suggests that access to parental resources, or family size at time of birth, relative rather than relative or absolute cohort size is more closely related to self-reported criminal or delinquent behavior. Although the equations which use absolute cohort size explain less variance than those using average parity, they are consistent with the latter in terms of the statistical significance and, in spite of some small *negative* zero-order correlations in Table I, in terms of the signs of the regression coefficients for cohort size. Also, at least for prevalence of general and Index offending, the difference in the amount of explained variance using the different cohort variables is small.

Table III presents the best-fitting equations for each of the dependent variables in greater detail. Durbin-Watson tests for each equation in Table III indicate that we may accept the hypothesis of no autocorrelated error (see Kelejian and Oates, 1974, pp. 200-203) for each of the equations.

(Table III about here)

For prevalence of general offending, we find both the nonlinear age effect suggested by the Maturational Reform hypothesis and the cohort effect predicted by the Easterlin hypothesis. The cohort effect is present regardless of which of the three cohort measures is used. In addition, there is a statistically significant period effect. For each year of age younger than 15 or older than 16, prevalence of general offending is reduced by 1.6 percent, and for each year after 1976, it declines by 2.5 to 3 percent, according to the equations in Table III. For each reduction of .026 (one half standard deviation) in average parity, prevalence of general offending is reduced by .07 to 1.0 percent.

As indicated in Table II, absolute deviation from age 15 plus year plus relative or absolute cohort size explains the prevalence of general offending nearly as well as the two equations in Table III ($R^2 = .84$ or .85 compared to .86), but the combination of absolute deviation from age 16 plus year plus either births or CBR results in at least one regression coefficient that is not statistically significant. For the logarithmic transformation of prevalence of general offending, the level of explanation is the same ($R^2 = .86$), and the best-fitting equations include a nonlinear age effect (absolute deviation from age 15), a period effect, and either parity or absolute cohort size effects. In the same equation, with CBR as the cohort measure, the regression coefficient of CBR is not quite statistically significant ($p = .068$). Also, the combination of absolute deviation from age 16 plus period explains as much variance in the logarithm of prevalence as does the combination of age, period, and cohort. The logarithmic equation results are thus slightly more ambiguous or equivocal than those for the untransformed equation for the prevalence of general delinquency. In all of the best-fitting equations, with or without logarithmic transformation, period has the strongest influence, and cohort size the weakest, on prevalence of general offending.

The mean frequency of general offending, with or without logarithmic transformation, appears to reach its peak at age 16, one year later than for prevalence. Again, there is both a nonlinear age effect and a cohort effect, as predicted by the Maturational Reform and Easterlin hypotheses, but for mean frequency of general offending there is no statistically significant period effect. These results are obtained regardless of which cohort measure is used. The weak negative period trend indicated in Table I is thus apparently a result of combined age and cohort effects. For each year of age younger or older than 16, the mean frequency of general offending decreases by 906 offenses per 1,000 people, or almost one offense per person. A reduction of .026 in average parity produces a reduction of over 1,300 offenses per thousand people. As Table II indicates, absolute deviation from age 15 could reasonably be substituted for absolute deviation from age 16, and/or relative (birth rate) or absolute (births) cohort size for average parity, albeit with some reduction in explained variance. In the best-fitting equations for mean frequency of general offending, the effect of cohort size is greater than the effect of age. It appears that cohort size or average parity have less impact on whether one commits an offense that on how often one commits it.

For prevalence of Index offending, there appears to be no nonlinear age effect, but instead a fairly strong negative trend with increasing age. Inspection of the age-and-period-specific data confirms that there is no clear unimodal, nonlinear pattern, but there is a general decline from age 11 to age 24. The highest rates of prevalence occur for ages 15-17, followed by 12-13; the lowest rates are for the oldest ages. The effect of average parity is once again evident, and there is no statistically significant period trend. An increase of one year in age is associated with a decrease of 1.4 percent, and a decrease of .026 in average parity is associated with a decrease of 1.2 percent, in the prevalence of Index offending. Replacing average parity with either relative or absolute cohort size results in a similar pattern, but with slightly lower explained variance. Note that a maturational effect, coupled with a period effect, is also plausible, and explains almost variance as the linear age plus parity (or age plus absolute cohort size) combination ($R^2 = .65$).

When a logarithmic transformation of Index offending prevalence is used, the results are equivocal. There appears to be either a cohort size effect or a combined period plus maturation effect, but not both. From Table II it is evident that absolute deviation from age 16 could be substituted for absolute deviation from age 15, and/or births or birth rate for parity, with little effect on the outcome of the analysis. For the logarithmic transformation, even a period effect coupled with an effect of chronological (not nonlinear) age is plausible. The combination of chronological age and parity is the combination of variables which appears in the best-fitting equation for the prevalence of Index offending whether or not the dependent variable is subjected to a logarithmic transformation (and also, as noted below, in the best-fitting equations for frequency of Index offending), and as such seems the more plausible of the two possibilities, but it is necessary to acknowledge that there is some ambiguity here. For all of the best-fitting equations, age has the stronger effect of the two variables in the equation.

Frequency of Index offending, whether the logarithmic transformation is applied or not, is best explained by chronological age and average parity. Each additional year of age after age 11 is associated with a decrease of 142 Index offenses per 1,000 people, and each reduction of .026 in average parity is associated with a decrease of 192 Index offenses per 1,000 people. The apparent period decline in Index offending rates (Table I) may thus be explained as a combination of age and cohort effects. As indicated in Table II, births may be substituted for parity with some loss in explained variance but no loss of statistical significance, whether the logarithmic transformation is used or not. CBR may be substituted in the equation for the logarithm of the frequency of Index offending, but doing so in the equation for the untransformed frequency of Index offending results in a regression coefficient for CBR that is not quite statistically significant ($p = .063$). For both the untransformed and the logarithmic equations, use of average parity results in considerably more explained variance than either of the two cohort size measures.

Unlike previous dependent variables, mean frequency of Index offending is substantially affected by the logarithmic transformation in another way. Using the logarithmic transformation approximately doubles the explained variance in mean frequency of Index offending. Otherwise, however, the structure of the model remains the same, with age having the larger and parity the smaller effect on the dependent variable.

8. METHODOLOGICAL IMPLICATIONS

The use of logarithmic transformations of the dependent variable generally appears to increase the explained variance in the dependent variable for frequency of offending, and results in more ambiguous results for prevalence, but otherwise leaves the structure of the model unchanged. Logarithmic transformation of the independent variable, once the dependent variable has been so transformed, slightly reduces explained variance in the dependent variable, but otherwise has little impact on the structure of the model. Use of absolute deviation from the peak year for offending in place of calendar year had little impact on the substantive results, but this may be because the peak year was so close to the beginning year of the study. The use of absolute cohort size (number of births) or relative cohort size (crude birth rate) in place of average parity reduces the variance explained in the dependent variable, but otherwise has little effect on the structure of the model. Use of absolute deviation in age, particularly from age 15 or 16 for the equations represented in Table III, increases the variance explained in general but not Index offending. In none of the models except those involving linear age, period, and crude birth rate does there appear to be a problem of collinearity and there is no evidence of autocorrelated error in any of the best-fitting equations. These results indicate first, that the substantive results of the analysis are usually only weakly affected by the variable transformations and substitutions used here. In particular, average parity and absolute cohort size appear to be reasonable substitutes for (and even explain more variance than) relative cohort size, measured (as suggested by Easterlin, 1987) as crude birth rate. If anything, the construct validity of average parity and absolute cohort size appears to be greater than that of relative cohort size in the context of the Easterlin hypothesis. Second, the ordinary least-squares regression approach to analyzing age, period, and cohort size effects appears to be appropriate, given both the levels of explained variance and the absence of autocorrelated error or collinearity.

Polynomial equations were also examined, and the results are available from the authors upon request. Briefly, the best-fitting polynomial equation for the prevalence of Index offending included a nonlinear period effect; otherwise, where age, period, and cohort size effects are present in the best-fitting equations in Table III, they are also present in the best-fitting polynomial equation. For both general and Index offending, the age effects in the polynomial equations were monotonic decreasing, suggesting a peak in delinquency prior to adolescence. Substantively, then, the equations in Tables II and III and the polynomial equations are almost identical in terms of which variables have significant effects, but theoretically, the polynomial equations are less supportive of the maturational reform hypothesis. Note that there is no theoretical, methodological, or substantive reason for preferring polynomial regression equations over the multiple linear regression equations with absolute difference terms used in Tables II and III. On the contrary, the equations in Tables II and III, with their explicit focus on mid-adolescence as the peak age for delinquency, are more appropriate for testing the maturational reform hypothesis than the polynomial equations.

9. THEORETICAL AND SUBSTANTIVE IMPLICATIONS

For the prevalence of general offending, there is a marked downward period trend that cannot be explained in terms of age or cohort effects. In other words, a decreasing percentage of individuals in any given cohort or any given age group is involved in illegal behavior over time for the ages and periods examined in this study. For frequency of general offending and for both prevalence and frequency of Index offending the apparent negative period trends (Table I) can be explained as a combination of age and cohort effects. This is consistent with Menard's (1987) findings that, for 15 and 16 year olds from 1976 to 1980, there was a statistically significant age-specific downward trend in the prevalence of general delinquency, but not in prevalence of Index offending or the incidence (mean frequency) of either general or Index offending. A smaller percentage of adolescents and young adults, then, are involved in minor illegal acts (since the change in prevalence cannot be attributed to any change in the prevalence of more serious, Index offenses, which show no statistically significant decline), but behavior otherwise appears to be relatively constant over time for age-and-cohort-specific aggregates of individuals. This general conclusion must be qualified by noting the mixed or ambiguous results in equations for the logarithms of general and especially Index offending prevalence rates. The contrast between the negative period trend for prevalence and the absence of any significant period trend for frequency reinforces the point made by Blumstein et al. (1986) and Elliott and Ageton (1980) that prevalence (based on number of offenders) and frequency (based on number of offenses) are two separate and distinct measures of delinquency, each useful in its own right, but not interchangeable.

There are two likely explanations for the difference between trends in prevalence and frequency of general offending. One possibility is that over time, fewer individuals are involved in offending at all levels of offending (frequent and infrequent), and that those who remain involved in offending increase the frequency with which they commit offenses. A second possibility is that over time, individuals who are infrequent offenders are disproportionately likely (compared to frequent offenders) to become nonoffenders, and that their suspension of offending affects prevalence (because there are relatively many low frequency offenders) but not mean offending rates (because they contributed relatively few offenses to the mean offending rate to begin with). Although detailed analysis of this issue is beyond the scope of the present paper, evidence in Elliott et al. (1989) indicates that transition to nonoffender status is most likely for the least frequent offenders, and least likely for the most frequent offenders. A disproportionate decline in the number of low frequency offenders is, therefore, at least part of the explanation for the decline in prevalence but not mean frequency of offending.

On the whole, the Easterlin hypothesis is well supported by the data. Counting both equations in which the dependent variable is not transformed and those in which the natural logarithm of the dependent variable is used, average parity has a statistically significant effect on each dependent variable in at least one of the best-fitting equations for that variable. The only variables for which the effect of cohort size is really questionable are prevalence of general and Index offending, and then only for one of the two or three best-fitting equations. Parity is consistently the strongest predictor of the mean frequency of general offending. For prevalence of both general and Index offending, if average parity is included in the equation, it has the weakest influence of the independent variables on the dependent variable. Average parity, then, appears to have more influence on the number of offenses committed than on the proportion of the population who commit them, but its influence is evident for both prevalence and frequency. As predicted by Easterlin (1987), then, cohort size or characteristics related thereto (lack of access to parental time and attention, as indicated by average parity) influence the likelihood and overall amount of criminal and delinquent behavior, at least for the adolescents and young adults considered here.

Maturational reform, which leads us to expect a nonlinear relationship between age and offending, with offending reaching its maximum level some time in mid-adolescence, appears to be more characteristic of general offending than of Index offending. It is possible that for Index offending, maturational reform occurs at an earlier age than those considered here, but given the negative trend with age, it is unlikely that it occurs later. Considering these results, plus those of Elliott et al. (1983), Kandel (1980), and Menard and Huizinga (1989), we may speculate that more serious forms of illegal behavior peak at earlier ages than less serious forms, e.g., Index offending in early adolescence (around ages 11-12), general offending in mid-adolescence (around ages 15-16), and drug use in early adulthood (around ages 20-21). Examination of the age-and-period-specific rates for prevalence and mean frequency of general and Index offending, indicates a relatively smooth curve to mean age-specific rates of general offending prevalence and mean frequency, but more irregular fluctuation in mean age-specific rates of Index prevalence and mean frequency. For the present, we must conclude that the Maturational Reform hypothesis is supported for general but not Index offending.

The idea that Index offending may peak at or before age 11 may strike some as surprising. One possibility is that this results from instability, either real or as an artifact of measurement error, in the NYS data. For example, older adolescents and young adults may not be reporting some acts which they would have reported when they were younger, or reporting rates may decline as a result of repeated interviewing.Note, however, that this purely linear effect occurs in the regression equations even though the zero-order correlations (Table I) between Index offending and absolute deviation from age 15 are, as expected from the Maturational Reform hypothesis, consistently stronger than the correlations between Index offending and chronological age. These results from Tables I and III suggest that the nonlinear relationship of age with Index offending, as indicated by |age - 15| reflects not instability but the combined linear effects of chronological age plus average parity or cohort size. Bear in mind, too, that we are dealing with the behavior of our respondents and not with the outcome of that behavior. If a person attacks someone with the intention of seriously injuring or killing them (aggravated assault), then, in the absence of firearms, the likelihood that the victim will be seriously injured or killed is much higher if the assailant is 20 rather than 12 years old. A person who tries to take something from a store without paying for it (larceny, more specifically, shoplifting) probably runs a greater risk of formal sanctions at age 21 than at age 11. It is possible that the linear negative relationship between Index offending and age represents a general attrition in serious antisocial behavior which is otherwise continuous from beginnings in early childhood (see, e.g., Loeber and Stouthamer-Loeber, 1987) through young adulthood and, for some, continuing into adulthood. Although the behavior does not change, the consequences (to both the objects of the behavior and to the person engaging in the behavior) do.

Our substantive conclusions regarding age, period, and cohort size effects are generally consistent with those of Smith (1986), who found that trends in homicide rates may be explained by age and cohort effects, just as we find that trends in the mean frequency of Index offenses can be explained in terms of age and cohort effects. Our results with regard to prevalence of general offending are also consistent with Maxim's (1985) findings concerning prevalence of juvenile court referral, particularly insofar as confirmation of the Easterlin hypothesis is concerned. Our findings regarding the mean frequency of Index offending, however, contradict those of Steffensmeier et al. (1987). The agreement of our results with those of Smith (1986) and Maxim (1985) suggest that the disparity of findings may be attributable not to differences between official arrest and self-report data, but to the choice of cohort indicators for testing the Easterlin hypothesis. In addition, the fact that Maxim (1985) used the same procedure of controlling for age and period (as opposed to partitioning of variance by simultaneously entering cohort into the regression equation with age and period) as O'Brien (1989) and Steffensmeier et al. (1987) suggests that the differences are not attributable to the more conservative testing of cohort effects in O'Brien (1989) and Steffensmeier et al. (1987).

Absolute cohort size appears to provide stronger and more consistent support for the Easterlin hypothesis across a range of offenses including minor delinquency, serious offending, homicide, and drug use (Maxim, 1985; Menard and Huizinga, 1989; Smith, 1986; and the present study) than does relative cohort size as used by O'Brien (1989) and Steffensmeier et al. (1987). From Table II, it is evident that CBR would have appeared in best-fitting equations only for the untransformed prevalence and frequency of general offending and the logged frequency of general offending, had CBR been our only cohort measure. None of the best-fitting equations for Index offending would have included the birth rate as a predictor. Instead, nonlinear age (Maturational Reform) and period effects would have predominated.

This finding raises an important question. Could we not conclude that there are, in fact, nonlinear age effects on Index offending, and that the use of cohort measures other than relative cohort size serve to mask those nonlinear age effects (and linear period effects as well)? If one is convinced that the effect of age on serious (Index) offending ought to follow the pattern suggested by the Maturational Reform hypothesis (or that the Maturational Reform hypothesis is, for some reason, theoretically superior to the Easterlin hypothesis), then this is an attractive argument. It suggests that the other measures of cohort size may be capturing the nonlinear component of the age effect. Our own conclusion is that the age-plus-parity model, along with the possibility that serious antisocial behavior either peaks before adolescence or declines continuously (or irregularly) throughout adolescence is more plausible. The Easterlin hypothesis appears to have more of a theoretical basis than the Maturational Reform hypothesis (which is little more than an empirical generalization), but the alternative must be acknowledged as a defensible possibility.

10. CONCLUSION: ISSUES FOR FUTURE RESEARCH

For prevalence of general offending we find, in descending order of magnitude, period, age (absolute deviation from age 15), and cohort size effects, and confirmation of both the Easterlin and Maturational Reform hypotheses. For mean frequency of general offending, the effect of cohort size dominates, with a secondary effect of age (absolute deviation from age 16), again confirming both the Maturational Reform and Easterlin hypotheses. For prevalence of Index offending, there is clearly an age effect and probably a cohort size effect, supporting the Easterlin hypothesis but contrary to the Maturational Reform hypothesis. Finally, the mean frequency of Index offending appears to be influenced by chronological age and cohort size, contrary to the Maturational Reform hypothesis but consistent with the Easterlin hypothesis.

The presence of a period effect for the prevalence of general delinquency is problematic, not from an analytical perspective but from a theoretical viewpoint. As Hobcraft et al. (1982, p. 5) explained:

> "Age is a surrogate—probably a very good one in most applications—for aging or more generally for physiological states, amount of exposure to certain social influences, or exposure to social norms. ...Indicators of period and cohort are much further removed from variables that presumably influence social processes. 'Period' is a poor proxy for some set of contemporaneous influences, and 'cohort' is an equally poor proxy for influences in the past. Measured 'effects' of periods and cohorts are thus measures of our ignorance: in particular, of whether the factors about which we are ignorant are more or less randomly distributed along chronologically measurable dimensions."

Hobcraft et al. (1982), like Mason et al. (1976), emphasized the importance of substituting, when possible, the variables for which period or cohort act as proxies (for example, the use of cohort size rather than year of birth). This has been done in the present study and in previous studies by Menard and Huizinga (1989) and O'Brien (1989), with results expected by the Easterlin hypothesis (note particularly O'Brien's results when he uses the same measure of relative cohort size, ratio of those aged 15-29 to those aged 30-64, that was used by Easterlin). With regard to the effect of period, however, it would be correct to infer that further explanation or elaboration is necessary. Although the Maturational Reform and Easterlin hypotheses help us to understand the presence of age effects and cohort size effects, we have no such basis for understanding period effects. Elaboration of period effects is beyond the scope of the present paper, but would be an appropriate topic for future research. In the present context, it is encouraging that all of the other dependent variables may be explained fairly well without recourse to the existence of period effects. For these other variables too, however, further elaboration of the models presented here constitutes an appropriate focus for future research.

The finding that age, period, and average parity (cohort) have different patterns of influence on the prevalence and frequency of general and Index offending should not be surprising. Even before some of the literature on criminal careers (e.g., Blumstein et al., 1986) suggested that prevalence rates and individual offending rates might not have the same etiology, empirical research indicated differences in the determinants of prevalence and frequency. For example, Elliott and Ageton (1980) found that differences between self-reports and official statistics regarding whether race and social class were correlated with delinquency were, at least in part, artifacts of the use of prevalence in self-reports and "incidence" (frequency) in official statistics, and that when self-reports used true frequency data, self-reports and official statistics appeared to be more consistent with one another. In other words, prevalence and frequency were not correlated with the same variables. Similarly, with regard to the differences in the influences on general and Index offending, Menard and Morse (1984) found differences in the influences on serious and nonserious delinquency, including an effect of sex (gender) on serious but not on nonserious delinquency. Such findings, along with those reported in the present study, reinforce our understanding that delinquency and crime are not monolithic phenomena. The rough division between general and Index offending in the present study could be broken down in to smaller aggregations of offenses (as in Greenberg and Larkin, 1985) or perhaps into specific offenses. This, however, is beyond the scope of the present study and is also left for future research.

A third issue to be settled by future research will be whether relative cohort size, as measured either by crude birth rate or as the ratio of younger to older cohorts, absolute cohort size as measured by total number of births, or some indicator related to but not properly a measure of cohort size, such as average parity, will prove more fruitful in the study of age, period, and cohort effects. Although relative cohort size is the measure suggested by Easterlin (1987) and others (Ahlburg and Schapiro, 1984; Harter, 1977; O'Brien, 1989; Steffensmeier et al., 1987) as most consistent with Easterlin's theory, it is arguable whether face validity or construct validity will prove the more compelling argument for the use of one measure over another. Of the measures considered here, the relative cohort size measures appear to produce the weakest agreement with the Easterlin hypothesis, and all of the measures can arguably be grounded in the work of Easterlin (1987) on the effects of cohort size on behavior. A fourth and related issue will be whether age and period will continue to be analyzed as dummy variables in ordinary least-squares (OLS) regression, as in O'Brien (1989), as continuous variables subject to nonlinear transformations in OLS regression, as in Menard and Huizinga (1989) and the present study, or as continuous variables in polynomial regression, as in O'Malley et al. (1984).

Given the availability of data on several different indicators for cohort variables which are not linearly dependent on age and period, and their successful use in this and previous studies, it seems unlikely that future research on age, period, and cohort influences on illegal behavior (crime, delinquency, drug use) will continue to rely on the dummy variable regression technique of Mason et al. (1973) or the alternative described by Palmore (1978) and implemented by Lab (1988) and O'Malley et al. (1984). Both the Mason et al. and the Palmore techniques require certain restrictive assumptions or conditions which are unnecessary when the cohort measure is not a linear function of age and period. Moreover, cohort (measured as year of birth) is, as Hobcraft et al. (1982) note, a "poor proxy" for more theoretically relevant variables such as those used in this and prior studies.

One of the most important issues for future research concerning age, period, and cohort effects on illegal behavior will be to move beyond the use of age, period, and cohort size as the only predictors of illegal behavior, and to add to them other variables, particularly as intervening variables which may explain the effects of age, cohort, and especially period. These may include other sociodemographic variables, such as sex, race, social class, and urban/rural residence, or variables from the theoretical (e.g., Vold and Bernard, 1986) and empirical (see, e.g., the review by Kercher, 1988) literature in criminology. The latter variables may include such theoretical predictors as aggregate levels of association with delinquent friends, belief in the moral validity of the law, bonding to family, school, and community, and perceived certainty of punishment. To expand the analysis in this direction, it seems likely that some form of self-report data will be necessary, since official data provide limited information on demographic characteristics, and little or no information on other theoretically relevant characteristics of offenders. In addition to the inclusion of new predictors, it may also be appropriate to consider separate analyses for different subsamples of respondents (e.g., white and nonwhite, male and female, middle and lower class, etc.) to determine whether the findings are robust across such subsamples, or whether they vary substantially for different groups within the larger sample.

Table I

ZERO-ORDER CORRELATIONS

Dependent variables	Independent variables: Age	|Age-15|	|Age-16|	Year	Parity	Births (absolute cohort size)	Birth rate (relative cohort size
GDCP: prevalence of general offending	-.675	-.756	-.690	-.862	.182	.071	.008
LGDCP: natural logarithm of GDCP	-.706	-.785	-.721	-.862	.134	.020	-.041
GDCF: mean frequency of general offending	.033	-.245	-.373	-.219	.518	.418	.364
LGDCF: natural logarithm of GDCF	.110	-.223	-.363	-.132	.569	.468	.398
INDP: prevalence of Index offending	-.673	-.728	-.636	-.736	.140	-.027	-.115
LINDP: natural logarithm of INDP	-.735	-.796	-.708	-.736	.078	-.113	-.208
INDF: mean frequency of Index offending	-.321	-.438	-.360	-.391	.234	.059	.004
LINDF: natural logarithm of INDF	-.554	-.677	-.608	-.578	.198	-.017	-.106

Table II

VARIANCE EXPLAINED (R^2) IN SELF-REPORTED OFFENDING

	Dependent variables							
Independent variables	GDCP	LGDCP	GDCF	LGDCF	INDP	LINDP	INDF	LINDF
Age	.46*	.50*	.00	.01	.45*	.54*	.10*	.31*
|Age-15|	.57*	.62*	.06	.05	.53*	.63*	.19*	.46*
|Age-16|	.48*	.52*	.14*	.13*	.40*	.50*	.13*	.37*
Year	.74*	.74*	.05	.02	.54*	.54*	.15*	.33*
Parity	.03	.02	.27*	.32*	.02	.01	.05	.04
Births	.01	.00	.17*	.22*	.00	.01	.00	.00
Crude birth rate (CBR)	.00	.00	.13*	.16*	.01	.04	.00	.01
Age + Year	.75	.75	.14*	.12*	.58	.62*	.15	.37
|Age-15| + Year	.81*	.84*	.07	.05	.65*	.72*	.21	.49
|Age-16| + Year	.84*	.86*	.14	.13	.64*	.70*	.19	.47*
Age + Parity	.72*	.72*	.31	.34	.67*	.72*	.27*	.53*
|Age-15| + Parity	.63*	.66*	.35*	.40*	.57	.66	.27	.52*
|Age-16| + Parity	.49	.52	.37*	.41*	.41	.50	.17	.38
Age + Births	.79*	.79*	.24	.26	.66*	.69*	.20*	.45*
|Age-15| + Births	.66*	.68*	.32*	.35*	.56	.65	.23	.49
|Age-16| + Births	.48	.52	.32*	.36*	.40	.51	.13	.37
Age + CBR	.79*	.79*	.20	.19	.63*	.66*	.18	.42*
|Age-15| + CBR	.67*	.69*	.30*	.32*	.56	.64	.22	.48
|Age-16| + CBR	.48	.52	.30*	.33*	.41	.37	.13	.37
Year + Parity	.78*	.76	.32	.34	.56	.55	.21	.37
Year + Births	.75	.74	.22	.24	.54	.55	.16	.33
Year + CBR	.74	.75	.18	.18	.56	.58	.15	.35
Age + Year + Parity	.82*	.81*	.32	.34	.68	.72	.28	.53
|Age-15|+Year+Parity	.86*	.86*	.36	.40	.69	.74	.28	.55
|Age-16|+Year+Parity	.86*	.87	.37	.41	.65	.70	.23	.50
Age + Year + Births	.80	.80	.25	.28	.66	.70	.20	.47
|Age-15|+Year+Births	.85*	.86*	.32	.38	.66	.72	.24	.51
|Age-16|+Year+Births	.85	.86	.32	.36	.64	.71	.20	.47
Age + Year + CBR	.80	.79	.24	.28*	.65	.69	.20	.47
|Age-15|+Year+CBR	.84*	.85	.31	.35	.66	.72	.23	.50
|Age-16|+Year+CBR	.84	.86	.30	.33	.64	.73	.19	.48

*All regression coefficients in this equation are statistically significant with probability $\leq$ .050.

Table III

BEST FITTING EQUATIONS FOR SELF-REPORTED OFFENDING

Dependent Variable	R^2: Explained Variance	Independent Variable	Beta: Standardized Regression Coefficient	B: Unstandardized Regression Coefficient	Significance of B	Intercept
GDCP	.86	$\lvert\text{Age}-15\rvert$	-.379	-1.63	.000	143.
		Year	-.620	-2.56	.000	
		Parity	.216	39.7	.001	
GDCP	.86	$\lvert\text{Age}-16\rvert$	-.332	-1.64	.000	209.
		Year	-.701	-2.89	.000	
		Parity	.141	25.9	.027	
LGDCP	.86	$\lvert\text{Age}-15\rvert$	-.421	-.036	.000	6.06
		Year	-.594	-.049	.000	
		Parity	.171	.625	.007	
LGDCP	.86	$\lvert\text{Age}-15\rvert$	-.465	-.040	.000	7.05
		Year	-.565	-.046	.000	
		Births	.149	.00016	.030	
LGDCP	.86	$\lvert\text{Age}-16\rvert$	-.395	-.039	.000	8.39
		Year	-.671	-.055	.000	
GDCF	.37	$\lvert\text{Age}-16\rvert$	-.314	-906.	.019	-134,919.
		Parity	.479	51417.	.000	
LGDCF	.41	$\lvert\text{Age}-16\rvert$	-.297	-.066	.021	-3.40
		Parity	.532	4.43	.000	
INDP	.67	Age	-.886	-1.38	.000	-101.
		Parity	.510	47.2	.000	
LINDP	.72	Age	-.929	-.112	.000	-5.36
		Parity	.467	3.34	.000	
LINDP	.72	$\lvert\text{Age}-15\rvert$	-.550	-.092	.000	7.74
		Year	-.385	-.062	.001	
INDF	.27	Age	-.508	-142.	.002	-18,464.
		Parity	.446	7386.	.005	
LINDF	.53	Age	-.772	-.193	.000	-12.9
		Parity	.520	7.71	.000	

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APPENDIX E

AGE, PERIOD, AND COHORT EFFECTS IN ALCOHOL AND DRUG USE

(MENARD AND HUIZINGA, 1989)

SOCIAL SCIENCE RESEARCH 18, 174–194 (1989)

Age, Period, and Cohort Size Effects on Self-Reported Alcohol, Marijuana, and Polydrug Use: Results from the National Youth Survey

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Age, period, and cohort size effects are calculated for alcohol, marijuana, and polydrug use for seven cohorts of youth, aged 11–17 in 1976 and 18–24 in 1983. Data are taken from the National Youth Survey, a longitudinal prospective probability sample. Use of cohort size, rather than year of birth, is based on existing theory (the Easterlin hypothesis) and allows parameter estimation by ordinary least-squares regression. The results confirm the existence of a nonlinear age effect with a peak at about age 20, a finding consistent with the hypothesis of maturational reform. The Easterlin cohort size hypothesis also receives support, with larger birth cohorts having higher rates of substance use for most of the dependent variables. Period effects are also present and appear to be nonlinear with a peak at 1980 for marijuana use; they are monotonically positive for alcohol and polydrug use. In several respects, these results for alcohol and illicit substance use differ from those for other types of illegal behavior with respect to age, period, and cohort size effects. © 1989 Academic Press, Inc.

Since the development of methods for parameterizing age, period, and cohort effects (Mason, Mason, Winsborough, and Poole, 1973) several attempts have been made to examine age, period, and cohort influences on crime and juvenile delinquency (Greenberg and Larkin, 1985; Maxim, 1985; Pullum, 1977; Smith, 1986; Steffensmeier, Streifel, and Harer, 1987). These studies have all used age- and period-specific police or court data, which are relatively easy to obtain for criminal offenses but which are more difficult to obtain for alcohol use and drug use, especially if, with regard to the latter category, one wishes to separate relatively more serious and less frequent multiple illicit drug use (heroin, cocaine, hallucinogens, barbiturates, amphetamines) from the relatively less serious and more common offense of marijuana use. It is therefore not surprising that, to date, alcohol and illicit drug use has not been accorded the same attention as crime and delinquency with respect to age, period, and cohort effects.

Glenn (1981) used the Mason *et al.* (1973) dummy variable regression model to examine age, period, and cohort effects on alcohol use among adults, aged 20–79. Glenn's main point, however, was a critique of that method and a cautionary note concerning the circumstances under which it is applicable.[1] O'Malley, Bachman, and Johnston (1984) used weighted least-squares regression to estimate age, period, and cohort effect parameters for 1976–1982 in a sample aged 18–24. Their sample consisted of those who were high school seniors at age 18, at the time of their initial interview, but excluded dropouts, making the sample imperfectly representative of the general youth population in that age range. In addition, their analytic strategy, which did not rely upon the dummy variable regression model of Mason *et al.* (1973), precluded the detection of simultaneous age, period, and cohort influences. In order to calculate parameters for their models, they assumed a priori that one of the three effect parameters (age, period, or cohort) was zero. If there are age, period, and cohort effects on a single dependent variable, this fact would be undetectable in the models used by O'Malley *et al.* In the present

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[1] Glenn (1981) emphasized a point made by Mason *et al.* (1973) in their original paper, namely, that the dummy variable regression technique is appropriate only if the thre effects are nonlinear. As Mason *et al.* note (p. 248) "linear effects are ambiguous t interpret, and can be estimated equally well by the pure effect variable or by the remainin two variables in the cohort analysis." See also note 10 below for a discussion of linea effects in the present analysis. Elsewhere, Glenn (1976) criticized the assumption of additivity made by users of the Mason *et al.* model. Rodgers (1982), using artificial data, and Greenberg and Larkin (1985), using empirical data, demonstrated that the finding using the Mason *et al.* dummy variable regression model are highly sensitive to mode specification, and Rodgers also pointed out the fact that measurement and sampling error may have substantial effects on the results. Knoke and Hout (1976), Mason, Mason, an Winsborough (1976), and Smith, Mason, and Fienberg (1982) have replied, arguing tha the dummy variable regression technique is more robust than its critics suggest and tha if properly used, it can be a useful tool for disentangling age, period, and cohort effects We have neither the desire nor the intention of entering the fray over the adequacy of the Mason *et al.* dummy variable regression technique as a method for analyzing age, period and cohort effects, but it is appropriate to note here the availability and use of the techniqu in previous studies of age, period, and cohort effects of illegal behavior, the limitation of the technique, and the fact that some authors regard results from that technique a problematic

study, we extend the domain of concern from previous studies of age, period, and cohort effects to include patterns of licit (alcohol) and illicit (marijuana and polydrug) substance use and allow for the presence of all three types of effects (age, period, and cohort) by replacing cohort, measured as year of birth, with cohort size, the theoretically relevant variable for which cohort (year of birth) is a proxy.[2] The sample we use includes respondents aged 11–24, over a period from 1976 to 1983, and our analytical approach allows the simultaneous estimation of age, period, and cohort size effects.

THEORY

As Glenn (1977) explained, the separation of age, period, and cohort effects is problematic because of sampling variability, cohort attrition, and the confounding of age, period, and cohort effects. The separation of age, period, and cohort effects may be facilitated, however, if we examine the data in light of two hypotheses: the Maturational Reform hypothesis and the Easterlin Cohort Size hypothesis.

The Easterlin hypothesis has been applied to illegal behavior, alcohol and drug use, suicide, divorce, and unemployment—in short, to a wide range of social problems (Easterlin, 1987). Easterlin asserted that the size of a cohort tends to be inversely related to the relative income of that cohort (relative, specifically, to aspirations, which are largely determined and measured by Easterlin in terms of parental income). More generally, resources are scarcer for larger cohorts than for smaller ones (see also Harter, 1977; Jones, 1980). Resources include not only income (in adult life), but also classroom space, parental attention, and assistance from teachers in childhood. It is not only absolute cohort size which may be important, but also the size of the children's cohort relative to the size of earlier cohorts, particularly the cohort of the parents (Harter, 1977; Ahlburg and Schapiro, 1984).

The greater scarcity of resources for larger cohorts leads to higher

levels of psychological and emotional stress, generated by the competition for (and, in proportionally more cases for larger cohorts, the failure to obtain) parental attention, employment, etc. This in turn leads to increases in a variety of social problems. The Easterlin hypothesis is thus a variant of strain theory, and Easterlin explicitly cited Durkheim (1951) and Merton (1968) regarding anomie. Easterlin was concerned with *macrosocial* variations, with differences between cohorts in *aggregate* rates, not with individual or microsocial patterns of behavior. In this respect, he has returned to the structural anomie theories of Durkheim and Merton, in contrast to the more social-psychologically oriented strain theories (Cloward and Ohlin, 1960) of the more recent past.

The Maturational Reform hypothesis arises from the empirical generalization that illegal behavior increases in early adolescence, is highest in middle to late adolescence, then declines in early adulthood (Farrington, 1986; Gold, 1970; Hirschi, 1969). This pattern holds true whether official statistics or self-report data are used (Blumstein, Cohen, Roth, and Visher, 1986, pp. 41–42; Jensen and Rojek, 1980, pp. 70–71 and 102) and forms the basis for the analysis of age structure and crime (Chilton and Spielberger, 1971; Steffensmeier and Harer, 1987). A similar pattern appears to be characteristic of alcohol and drug use, but both initiation and maximum involvement occur later for alcohol and drug use than for other types of delinquency. According to Kandel (1980) rates of both legal and illegal drug use peak around ages 18–21 and decline thereafter.

A number of different explanations have been suggested for the apparent pattern of maturational reform or "aging out" of delinquency. These same explanations may be proposed for the maturational reform in substance use, if Kandel is correct about substance use peaking around age 20. Matza (1964) suggested that the increase in delinquent behavior during adolescence arises from uncertainties about roles and misinformation about the attitudes of peers, a condition of normlessness which is resolved with the completion of the transition from childhood (through adolescence) to adulthood. Briar and Piliavin (1965) suggested that the declining illegal behavior of late adolescence and early adulthood is a result of increased commitment to conventional institutions and to behavioral conformity. Greenberg (1977) explained the variations in delinquency with age by a combination of elements of strain and control theory. Hirschi and Gottfredson (1983) asserted that age has a direct effect on crime, independent of other theoretically important variables. Regardless of which (if any) of these explanations we accept, the inverted U-shaped relationship of alcohol and drug use with age is to be expected.

DATA

Data on age, period, and self-reported substance use are taken from which has been described in detail elsewhere (Elliott and Ageton, 1980; Elliott, Ageton, Huizinga, Knowles, and Canter, 1983; Elliott, Huizinga, and Ageton, 1985). The NYS traces a nationally representative sample of seven cohorts of youth, aged 11–17 in 1976, for whom data are presently available for the years 1976–1980 and 1983.[3] The NYS provides data on both *prevalence* and *mean frequency* of alcohol, marijuana, and polydrug use. *Prevalence* refers to the proportion or the percentage of respondents who use a particular substance in a given time period. *Mean frequency* of use is the total number of times per year that respondents report using a particular substance, divided by the total number of respondents (including those who report no substance use that year). Because of the way it is constructed, mean frequency of use (also called incidence in earlier reports from the NYS) is analogous to rates of crime as published by the Federal Bureau of Investigation in its annual Uniform Crime Reports or rates of victimization as published by the annual National Crime Survey, conducted by the U.S. Census Bureau. Data on cohort size are taken from the U.S. Bureau of the Census (1975; see also Easterlin, 1987; Zajonc, 1976) and include data on absolute cohort size (total number of births in a year, divided by 1000) and relative cohort size (average parity in a year).

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[2] Unlike cohort, measured as year of birth, cohort size is not a linear function of age and period, and simultaneous effects of age, period, and cohort size can therefore be estimated using ordinary least-squares regression. As indicated in the main text, cohort size is theoretically (via the Easterlin hypothesis) relevant to the explanation of alcohol, marijuana, and polydrug use. Although, as one anonymous reviewer of an earlier draft of this paper suggested, it is possible that there are some cohort effects other than those resulting from cohort size, there is no theoretical basis for expecting such "other" effects, or even for identifying what about cohorts would produce such effects. Also as noted in the main text, cohort measured as year of birth is an atheoretical variable, and as suggested by Mason *et al.* (1976) and Rodgers (1982), should be replaced by theoretically relevant variables if possible. For theoretical reasons, then, cohort effects will be assumed to operate only via cohort size. This theoretical specification has the secondary but welcome side effect of allowing us to use ordinary least-squares regression instead of the more controversial dummy variable regression approach of Mason *et al.* (1973).

MEASUREMENT

The use of official arrest and court referral data as indicators of delinquency or crime is a limitation of most prior studies of age, period, and cohort effects on crime and delinquency. The relative advantages and disadvantages of official and self-report data as indicators of criminal or delinquent behavior have been reviewed in detail elsewhere (for example, O'Brien, 1985) and it is not our intent to present yet another general discussion of official and self-report data here. Specific to the present analysis, however, we wish to suggest that official statistics may not be good indicators of period trends in illegal behavior, and period

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[3] An anonymous reviewer of an earlier draft of this paper raised the issue of whether the number of cohorts (7) and the length of the period (8 years) were sufficient to test for cohort size and period effects. The reviewer's concerns are appropriate, but the results (see Table 3) indicate that the variation in cohort size among the seven cohorts was sufficient to confirm the hypothesized cohort size effect in 9 of the 12 best-fitting equations, and the 8-year time period was sufficient to produce a period effect in all of the best-fitting equations. The limitation on number of cohorts and number of years necessarily limits the range of ages (ages 11–24), on the one hand offsetting the possibility that age effects could be overestimated relative to period and cohort effects, and on the other limiting the generalizability of our results to adolescence and young adulthood. The number of cohorts, years, and ages are thus apparently sufficient to test for the presence of age, period, and cohort size effects, but it would be desirable to extend these results beyond the early adult and adolescent ages and to replicate these results for a longer period of time and perhaps for a larger number of cohorts.

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is one of three major variables in any analysis of age, period, and coho
effects. O'Brien (1985), after a review of the literature on the subjec
came to the conclusion that "it is not, in general, safe to consider change
in official crime rates over time as changes in rates of offending." Maxi
(1985) found evidence in his data that official policies, perhaps in respon
to "saturation" of the juvenile justice system by large cohorts of yout
may have had an impact on trends in age-specific prevalence of juveni
court referral. Menard (1987) and Menard and Covey (1988) documente
the existence of divergent period trends between official statistics (o
fenses known to the police and arrest rates) and victimization and se
report (prevalence and mean frequency) data. Indeed, Menard found th
trends in rates of arrest (the usual measure in age–period–cohort studie
and rates of offenses known to the police may diverge from one anoth
even for homicide, a finding which further calls into question the validi
of arrest statistics as indicators of criminal behavior. For substance us
we have the additional problem that commonly used official sources
not disaggregate by type of substance.

In the present study, we use six indicators of self-reported substan
use. Prevalence and mean frequency of alcohol use deal with a substan
whose use is illegal for adolescents but legal for adults. Prevalence
alcohol use is substantial even at early ages (23–27% at age 12). Pre
alence and mean frequency of marijuana use deal with a "soft" dru
whose prevalence is low in early adolescence (2–4% at age 12). Marijua
use is illegal for both adolescents and adults. Prevalence and mean f
quency of polydrug use refers to the prevalence and mean use rate
any combination of five types of "hard" drugs for which data w
collected in each wave of the NYS: heroin, cocaine, hallucinogens, b
biturates, and amphetamines. Prevalence of polydrug use is very low
early adolescence (0–1% at age 12, 1–2% at age 13). All depend
variables are age- and period-specific aggregate rates.

One would think that the measurement of the age effect should
straightforward, but that would be true only if we expected the eff
of age on substance use to be linear. The Maturational Reform hypo
esis, however, leads us to expect a nonlinear relationship between
and substance use and does not specify at what age the prevalence
mean frequency of substance use should reach its maximum. In
present analysis, we use chronological age (age at last birthday) as
variable which may influence substance use, but we also examine
results of replacing chronological age with the *absolute deviation* fr
the age of maximum prevalence or mean frequency of use. The absol
deviation refers to the absolute value of the difference between chr
ological age and age of maximum alcohol and drug use, or |(chronologi
age) − (age of maximum use)|. Consistent with the Maturational Ref
hypothesis, the absolute deviation from age of maximum substance

is, by definition, a U- or J-shaped function of age. If substance use has a similar (or inverted) nonlinear relationship with age, then substance use should have an approximately linear relationship with absolute deviation of chronological age from age of maximum substance use.

The measurement of time period as calendar year is straightforward. We have also considered the possibility of a nonlinear period relationship. For cohort size, we have used absolute cohort size (total number of births in each year) as in Easterlin (1987), Maxim (1985), and Smith (1986). We should note, however, that Easterlin's hypothesis deals generally with the *relative* sizes of cohorts of parents and children. One common method of measuring relative cohort size is to use the ratio of persons under a certain age to persons over a certain age or to use a ratio involving two age ranges, one of which may reasonably be interpreted as the "parental" generation with respect to the other. Steffensmeier *et al.* (1987) used the ratio of those aged 15–24 to those aged 24–64. Easterlin (1987), in addition to using absolute cohort size, used the ratio of those aged 15–29 to those aged 30–64. These ratios measure the number of adolescents and young adults relative to the number of older adults, but they do not really reflect the concept of the relative size of parental and filial cohorts, because some of the older adults included in the comparison have no children or have children within the age range defined for older adults or younger than the age range defined for youth and young adults. Some of those in the younger cohort have parents older than 64 or brothers or sisters (same generation) a few years older than themselves who fall within the age boundaries defined for the older adults. Most importantly, there is no direct comparison between children and their actual parents.

As an alternative measure of relative cohort size, we used *average parity*, or average birth order, of each cohort. The parents who have children in a particular year were thus defined as an *event cohort* (Graetz, 1987), the event being the birth of a child in a particular year from 1959 to 1965. For these seven event cohorts of parents, and the corresponding birth cohorts (children born between 1959 and 1965), average parity for a given year is the ratio of the number of children, including older siblings of those in the birth cohort, to the number of parents in the event cohort, in the year of the event (the year in which the parent in the event cohort gives birth to the child in the birth cohort). This is equivalent to the mean family size at the time of birth of the child in the relevant birth cohort. It does not, however, necessarily correspond to subsequent family size (for example, completed family size for the parents in the event cohort). Whether this is thought of as a measure of relative cohort size of parents and children, as we suggest, or as a measure (at one particular point in time) of family size, average parity is an indicator of the relative availability of parental attention, the resource most relevant in early

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childhood (see, for example, Zajonc, 1976). Use of this measure produc results which were substantively identical to the results using absolu cohort size.[4] Results involving relative cohort size (average parity) a therefore not presented in detail here, but are available from the autho upon request.

The present study should not be confused with previous studies (f example, Biles, 1971; Lees and Newson, 1954; Nye, 1958; Rahav, 198 of the relationship between individual birth order and individual leve of delinquent or problem behavior. Here, we are not concerned with t impact of birth order as such or with whether middle-born children ha higher or lower rates of substance use than first-born or last-born ch dren. Neither is the close relationship between individual birth order a individual family size (Menard, 1981, p. 197 and note 6) problematic the present context. Our concern here is with *aggregate* level differenc in cohort size, not with cohort size or other variables measured at t individual level.

METHODS

In addition to our concerns regarding the use of arrest or court refer statistics and the measurement of relative cohort size in past studi we question the use of the additive dummy variable model develop by Mason *et al.* (1973) in the studies by Maxim (1985), Smith (198 and Steffensmeier *et al.* (1987). This model is inappropriate for testi the Easterlin hypothesis when data on cohort size are available. We a not echoing Glenn's reservations about the additive model for param terizing age, period, and cohort effects nor do we question Greenb and Larkin's (1985) or Pullum's (1977) use of similar models, given t atheoretical context within which they were presented. Indeed, we reg the Mason *et al.* model as extremely valuable in the exploratory analy of age, period, and cohort effects when there is no a priori specificati of the form (linear, logarithmic, polynomial) that those effects may ta or of the relevant variables (absolute or relative cohort size) for whi those effects act as proxies. Instead we wish to reiterate a crucial point stated by Mason, Mason, and Winsborough (1976, p. 905)[5]:

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[4] In a separate analysis, not presented in detail here, relative cohort size (average pari was found to be a better predictor than absolute cohort size for FBI Index and Gen (Index plus other) offending. NYS data indicate that for those ever involved in Gen or Index offending, initiation of criminal or delinquent offending typically occurs ear than (for those ever involved in alcohol, marijuana, or polydrug use) initiation of substa use. We can only speculate that behavior which tends to have an earlier age of initia may be more sensitive to relative rather than absolute cohort size or that some ot qualitative difference between substance use and other types of delinquent or crim behavior makes delinquent behavior other than substance use more responsive to rela rather than absolute cohort size.

> What deserves special emphasis here is that in models of the sort considered in our article, age, period, and cohort are proxies for unmeasured mechanisms or variables. If these mechanisms or variables were measured and available for analysis, the estimability problem dealt with in our paper either would not occur or would be different. For example, if cohort size is held to be the variable which causes cohort differentiation in the context of a specific substantive problem, then, if size measurements can be constructed, it is unnecessary to include cohorts as such in the specification because the preferred variable is available. Under circumstances like this, the results of cohort analysis become less tentative, since the estimability problem as we described it is eliminated. The replacement of proxies by the variables they index is a universal goal of research.

Mason *et al.* (1973) were concerned with the estimation of cohort effects when cohort itself, operationalized as year of birth, had to be entered into an analysis as an independent variable along with chronological age and period (year). As they indicate, for these measures, cohort = year − age. By contrast, cohort *size* bears no such fixed, linear relationship to year and age. For that matter, the absolute deviation of age from some specified age also bears no such fixed, linear relationship to cohort and year. Use of either cohort size or absolute deviation of age eliminates the problem of estimability that Mason *et al.*'s method was designed to solve. Instead of estimating 39 (Pullum), 54 (Smith), 77 (Maxim), or 79 (Steffensmeier *et al.*) dummy variable parameters for each dependent variable, and losing some information when we impose constraints on the model to make it estimable, it is only necessary to estimate a maximum of three parameters per dependent variable (12 if we consider all possible combinations of age, period, and cohort size effects) to test the Easterlin or Maturational Reform hypotheses.

We shall proceed by assuming a linear, additive relationship between the six dependent variables and the three independent variables. The assumption of additivity is no different from that made by the Mason *et al.* dummy variable model. The assumption of linearity is tested to some extent by examining (a) the explanatory power of the model, that is, how well does a linear model explain each of the dependent variables, (b) the effect of taking the natural logarithm of the dependent variables, (c) the effect of substituting the absolute deviation from the age of maximum substance use for chronological age, consistent with the Maturational Reform hypothesis, and (d) the effect of substituting the absolute

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[5] One of the principal critics of the Mason *et al.* dummy variable regression approach to analyzing age, period, and cohort effects (Rodgers, 1982) makes the same point: "the problem of nonestimability disappears if at least one of the indicators—age, period, or cohort—can be replaced by more direct measures of the theoretical concepts."

deviation from the calendar of the year of maximum substance use, |(calendar year) − (year of maximum use)|. The use of the natural logarithm in (b) has some precedent (Steffensmeier *et al.*, 1987) and seems appropriate, given the skewness of some of the data. We use ordinary least-squares linear regression to calculate the magnitude and statistical significance of age, period, and cohort size effects and consider reduced models which include only statistically significant regression coefficients.[6] Principal components test for collinearity and the Durbin–Watson test for autocorrelated error are also considered.

RESULTS

Table 1 presents the zero-order correlations between the dependent and independent variables. For each of the independent variables, results are presented both with and without logarithmic transformation of the dependent variable.[7] For age, both chronological age and the absolute deviation from age 20, |(chronological age) − 20|, are presented. Age 20 was selected both because it falls within the range of ages during which Kandel (1980) suggests that maturational reform in substance use occurs, and because all three types of substance use peak within one year of age 20.[8] For period effects, calendar year and absolute deviation from

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[6] Polynomial regression models were also examined and are available from the authors upon request. Briefly, in the best-fitting polynomial equations for prevalence and logged frequency of alcohol, marijuana, and polydrug use, period effects were eliminated from the equations (Table 3) for alcohol prevalence and for both prevalence and logged frequency of polydrug use. Absolute cohort size was eliminated from the equation for alcohol prevalence, but relative cohort size was added to the equation for logged frequency of polydrug use and appeared in place of absolute cohort size in the equations for prevalence and logged frequency of marijuana use and for prevalence of polydrug use. All of the age effects in the polynomial equations are curvilinear, with a positive linear effect and a negative quadratic effect, supporting the maturational reform hypothesis. The change from absolute to relative cohort size is minor, and cohort size continues to appear in the best-fitting equations for five of the six dependent variables. There is little or no change in the theoretical implications of the polynomial equations, compared to the equations in Table 3, and the only substantive change is the elimination of the (atheoretical) period effects from some of the equations. Note that there is no theoretical, methodological, or substantive reason for preferring polynomial regression equations over the multiple linear regression equations using absolute differences presented in Tables 2 and 3. On the contrary, the equations in Tables 2 and 3, with their explicit focus on age 20 as the age of peak substance use, are more appropriate for testing the maturational reform hypothesis.

[7] Because the prevalence and mean frequency of use of some substances for certain ages and periods was zero, the transformation actually used was ln (substance use + 1), where substance use may refer to either prevalence or mean frequency.

[8] Consistent with Kandel's (1980) description of the peak ages of alcohol and drug use, we considered ages 18, 19, 20, and 21 as well as chronological age. The age-specific distribution of offenses indicated a maximum age-specific rate for each substance use within one year of age 20. Zero-order correlations were highest (in absolute value) for age 20 as the age of maximum offending in 7 of 12 comparisons (prevalence and mean frequency,

TABLE 2
Variance Explained (R^2) in Self-Reported Substance Use

:pendent ables	ALCP	LALCP	ALCF	LALCF	MRJP	LMRJP	MRJF	LMRJF	DRGP	LDRGP	DRGF	LDRGF
	.74*	.57*	.83*	.84*	.67*	.54*	.71*	.72*	.88*	.74*	.44*	.54*
:-20|	.84*	.68*	.73*	.89*	.89*	.74*	.86*	.83*	.88*	.82*	.53*	.68*
r	.32*	.25*	.48*	.44*	.26*	.22*	.35*	.31*	.53*	.38*	.41*	.41*
ır-80|	.13*	.14*	.14*	.18*	.23*	.20*	.24*	.21*	.14*	.18*	.11*	.18*
hs	.43*	.38*	.28*	.40*	.41*	.36*	.36*	.40*	.29*	.15*	.10*	.15*
+ year	.75	.58	.83	.85	.70	.55	.72	.69	.89	.74	.49	.56
:-20| + year	.84	.68	.79*	.91*	.89	.71	.86	.83	.90*	.81*	.60*	.72*
+ |year-80|	.76*	.61	.86*	.89*	.75*	.62*	.80*	.75*	.91*	.76	.48*	.61*
:-20| + |year-80|	.84	.68	.73	.89	.90*	.72	.87*	.84	.85	.82	.53	.69
+ births	.77*	.62*	.83*	.84*	.71*	.58*	.73	.71*	.88	.77	.45	.55
:-20| + births	.86*	.71	.73	.90*	.90*	.72	.86	.84	.85	.82	.55	.69
r + births	.76*	.63*	.76*	.84*	.66*	.58*	.70*	.71*	.82*	.73*	.50*	.56*
ır-80| + births	.56*	.52*	.42*	.58*	.63*	.56*	.59*	.52*	.43*	.52*	.21*	.33*
: + year + ırths	.78	.63	.83	.87	.71	.60	.73	.73	.88	.76	.51	.57
: + |year-80| + ırths	.81*	.68*	.86	.91*	.82*	.69*	.83*	.69*	.91*	.81*	.48	.61
:-20| + year + ırths	.88*	.73	.82*	.95*	.90	.73	.88*	.86	.92*	.85*	.60	.72
:-20| + |year-80| · births	.73	.72	.73	.91	.92*	.75*	.89*	.87*	.85	.83	.55	.70

All regression coefficients in this equation are statistically significant with probability ≤.050.

nonlinear age effect explain prevalence of substance use any better tha use of a linear age effect?) as well.

From Table 2 it is readily apparent that age, however measured, ha the strongest impact on the dependent variables. Period and cohort mea sures typically increase the explained variance in the dependent variable by less than 2% compared with age, but the addition of age to either o the other variables typically doubles the variance explained by thos variables and may increase the variance explained by *both* period an cohort size more than 10%.

Table 3 presents the best-fitting equations for each of the dependen variables in greater detail. Durbin–Watson tests for autocorrelated erro (Kelejian and Oates, 1974, pp. 200–203) indicate the presence of auto correlated error in some of the equations: the equations for the natur logarithm of alcohol prevalence, the (untransformed) mean frequency o alcohol use, the natural logarithm of marijuana prevalence, and the (un transformed) prevalence of polydrug use. There is no autocorrelated erro in the equations for the natural logarithms of alcohol, marijuana, o polydrug mean frequency or in the equation for mean frequency (un transformed) or marijuana use when absolute cohort size is in the equa tion. For the other equations, the test is inconclusive about the presenc of autocorrelated error. The presence of autocorrelated error suggest that caution is necessary in interpreting some of the results in Table

For alcohol prevalence, both the Maturational Reform hypothesis an the Easterlin hypothesis are supported. Prevalence of alcohol use is bett explained by absolute deviation from age 20 than by chronological ag and absolute deviation from age 20 is also the strongest predictor prevalence of alcohol use in the best-fitting equation. The negative regre sion coefficient indicates that, as expected, prevalence of alcohol u increases up to about age 20, then declines thereafter. For each year b which age differs from age 20, prevalence of alcohol use is lower b 5.6%.

For prevalence of alcohol use, the Easterlin hypothesis is support and cohort size has the second strongest effect on alcohol prevalenc Recalling that births are measured in thousands, a reduction in absolu cohort size of 100,000 births is associated with a reduction in alcoh prevalence of 3.6%. Of the three independent variables, period has t weakest effect on prevalence of alcohol use. In the first (unlogged) equ tion, there is an increase in alcohol prevalence of about 1.9% per ye from 1976 to 1983, and the exclusion of period from the equation wou reduce the explained variance in alcohol prevalence by only 2% (s Table 2). In the best-fitting equation for the natural logarithm of alcoh prevalence, the period effect is nonlinear, and logged prevalence of a cohol use increases until 1980, then decreases.

the years 1978, 1979, and 1980 were examined. The years 1978–1980 were chosen because in the NYS data the prevalence of all three types of substance use for 1976–1983 peaks within one year of 1979.[9] For the analyses done in this paper, it was found that the absolute deviation from 1980 was at least as powerful as absolute deviation from 1978 or absolute deviation from 1979 in explaining the dependent variables, so results are presented here only for absolute deviation from 1980. Finally in accordance with our previous discussion of the Easterlin hypothesis, total number of births (in thousands) is included as an indicator of relative and absolute cohort size.

The correlations in Table 1 indicate that there is a high correlation between age and each of the dependent variables, whether chronological age or absolute deviation from age 20 is used. Chronological age is positively correlated with the dependent variables, indicating a general increase in substance use from age 11 to age 24. The correlation of absolute deviation from age 20 with the dependent variables is negative, indicating a peak at age 20, consistent with the maturational reform hypothesis. On the average, the correlations involving absolute deviation from age 20 are larger in magnitude than those involving chronological age. This suggests that maturational reform may explain the relationship between age and substance use better than a simple linear age effect.

The correlations involving calendar year and absolute deviation from 1980 clearly indicate that the linear period trend represented by the use of calendar year is more strongly associated with each of the dependent variables than any of the nonlinear trends represented by the use of

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with and without logarithmic transformation, of alcohol, marijuana, and polydrug use) and were within .05 of the maximum correlation for the other five comparisons. |Age-19| had the highest correlation with the natural logarithm of marijuana prevalence, but the difference was miniscule between |Age-19| ($r = -.841$) and |Age-20| ($r = -.840$). |Age-21| was more strongly correlated than |Age-20| with mean frequency of alcohol use and with prevalence of polydrug use, both with and without logarithmic transformation. Further exploration of these comparisons in the regression analysis indicated no change in the final equations (Table 3) except for the elimination of cohort size from the equation for prevalence of polydrug use when age 21 instead of age 20 was used. It is possible that the specification with age 21 is correct and that specification explains 2% more of the variance (94 vs. 92%) than does the specification with age 20 as the peak age of substance use. Note, however, that there is greater consistency between the logarithmically transformed and untransformed equations with age 20. Given only one instance which suggests, not very strongly, that use of |Age-20| for all of the dependent variables *may* produce an inaccurate result, for simplicity we consider only age 20 as the age of maximum offending in the remainder of this paper.

[9] Johnston, O'Malley, and Bachman (1986) found that for high school seniors from 1976 to 1983, prevalence of both alcohol and marijuana use *peaked in 1979. For the drugs used* in our polydrug use measure, hallucinogens peaked in 1979, barbiturates in 1978, stimulants (the class of drugs which includes amphetamines) peaked in 1980, cocaine peaked in 1981, and heroin peaked in 1976–1978 (equal prevalence in all 3 years), and then declined.

TABLE 1
Zero-Order Correlations

	Independent variables				
Dependent variables	Age	|Age-20|	Year	|Year-80|	Births (absolute cohort size)
ALCP: prevalence of alcohol use	.859	−.917	.569	−.362	.657
LALCP: natural logarithm of ALCP	.754	−.826	.496	−.375	.619
ALCF: mean frequency of alcohol use	.911	−.853	.691	−.373	.532
LALCF: natural logarithm of ALCF	.919	−.943	.660	−.421	.634
MRJP: prevalence of marijuana use	.819	−.943	.505	−.475	.639
LMRJP: natural logarithm of MRJP	.735	−.840	.474	−.445	.600
MRJF: mean frequency of marijuana use	.845	−.925	.590	−.485	.597
LMRJF: natural logarithm of MRJF	.825	−.911	.561	−.455	.632
DRGP: prevalence of polydrug use	.940	−.921	.727	−.369	.539
LDRGP: natural logarithm of DRGP	.859	−.903	.620	−.417	.590
DRGF: mean frequency of polydrug use	.666	−.728	.640	−.336	.309
LDRGF: natural logarithm of DRGF	.737	−.825	.640	−.419	.390

absolute deviation from 1980 (or, although the results are not presente in detail here, from 1978 or 1979). The average correlation betwee calendar year and the dependent variables is larger than the averag correlation between any of the other three indicators of period effects. This difference is greater and more consistent than the difference foun between indicators of either age or cohort size. The correlations betwee the dependent variables and cohort size are, on average, smaller tha the correlations involving age and slightly smaller than the correlation involving period (as measured by calendar year), but they are still moderate to strong (.31 to .66) in magnitude.

Table 2 presents the variance explained in each of the dependen variables by regression equations which include different combination of the independent variables. Equations for which all of the regressio coefficients are statistically significant at the .050 level are so identifie in Table 2. Principal components tests for collinearity (Chatterjee an Price, 1977) indicate no problem of collinearity for any of the combinations of independent variables in Table 2. For purposes of this study the *best-fitting equation* for each dependent variable is defined as tha equation (a) for which all of the regression coefficients are statisticall significant at the .050 level and (b) which explains the greatest amoun of variance in the dependent variable. With this definition, we are abl to evaluate hypotheses in an absolute sense (is there a statistically significant nonlinear age effect?) and in a relative sense (does the use of

TABLE 3
Best-Fitting Equations for Self-Reported Substance Use

Dependent variable	R^2: Explained variance	Independent variable	β: Standardized regression coefficient	B: Unstandardized regression coefficient	Significance of B	Intercept
ALCP	.88	|Age-20|	−.631	−5.60	.000	−203.
		Year	.202	1.87	.015	
		Births	.288	.036	.007	
LALCP	.68	Age	.503	.075	.000	−.461
		|Year-1980|	−.255	−.006	.012	
		Births	.323	.001	.008	
ALCF	.86	Age	.872	7.31	.000	−84.9
		|Year-1980|	−.164	−3.10	.012	
LALCF	.95	|Age-20|	−.589	−.285	.000	−16.6
		Year	.318	.160	.000	
		Births	.290	.002	.000	
MRJP	.92	|Age-20|	−.763	−5.00	.000	−15.1
		|Year-1980|	−.170	−1.95	.002	
		Births	.193	.018	.002	
LMRJP	.75	|Age-20|	−.624	−.221	.000	−.329
		|Year-1980|	−.196	−.121	.041	
		Births	.235	.001	.031	
MRJF	.89	|Age-20|	−.767	−4.64	.000	−8.21
		|Year-1980|	−.178	−1.89	.007	
		Births	.149	.013	.043	
LMRJF	.87	|Age-20|	−.722	−.324	.000	−1.16
		|Year-1980|	−.166	−.131	.020	
		Births	.210	.001	.010	
DRGP	.92	|Age-20|	−.573	−1.83	.000	−121.
		Year	.394	1.31	.000	
		Births	.204	.009	.003	
LDRGP	.85	|Age-20|	−.617	−.228	.000	−9.56
		Year	.261	.100	.005	
		Births	.229	.001	.014	
DRGF	.60	|Age-20|	−.538	−.800	.000	−32.6
		Year	.328	.507	.012	
LDRGF	.72	|Age-20|	−.683	−.224	.000	−4.29
		Year	.244	.083	.024	

neither maturational reform nor the Easterlin hypothesis when the logarithmic transformation is not used. Instead, frequency of alcohol use appears to have increased with age from ages 11 to 24 and to have increased over time from 1976 to 1980, then declined from 1980 to 1983. Each year of age is associated with an average increase in use of 7 times per person per year. For each year's difference from 1980, an average decrease in frequency of 3 times per person per year is indicated.

By contrast, the equation for the natural logarithm of the mean frequency of alcohol use supports both the Maturational Reform and Eas-

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terlin hypotheses. The logarithmic equation, moreover, has higher e plained variance and no autocorrelated error, a problem which does affe the unlogged equation. For the logarithmic equation, absolute deviati from age 20 has the strongest effect, followed in order by period a cohort size.

Whether the logarithmic transformation is used or not, the prevalen of marijuana use is best explained by a combination of the Maturation Reform hypothesis, the Easterlin hypothesis, and a nonlinear period tre with a peak in 1980. The age effect is the strongest of the three, a each year of age over or under age 20 is associated with a 5% reducti in prevalence of marijuana use. Cohort size has the next strongest effe and a reduction of 100,000 in the number of births is associated with decrease of 1 to 2% in the prevalence of marijuana use. Finally, for ea year earlier or later than 1980, there is nearly a 2% reduction in marijua prevalence. As with alcohol prevalence, the equation without the log rithmic transformation has the higher explained variance for marijua prevalence.

The use of the logarithmic transformation for mean frequency of m ijuana use affects only whether period (in the logarithmic equations) cohort size (in the unlogged equations) has the smallest effect on t mean frequency of marijuana use. Otherwise, the explained variance about the same, and both the Maturational Reform and Easterlin h potheses are supported. The age effect is strongest, with each ye younger or older than age 20 being associated with a decrease of abo 5 occasions of use per person, or 4600 to 4800 occasions of use per 10 people. For each year before or after 1980, a reduction of nearly occasions of use per person is indicated, and for each reduction of 100,0 births, a reduction of 1 occasion of use per person occurs.

Prevalence of polydrug use also produces results consistent with bo the Maturational Reform and Easterlin hypotheses. Age has the strong influence on polydrug use prevalence, followed in turn by period a cohort size. For each year of age older or younger than age 20, polydr use prevalence is reduced by about 2%. Each year after 1976 is associat with an increase in polydrug use prevalence of a little over 1%, and reduction of 100,000 births is associated with a reduction of about 1 in polydrug use prevalence.

For mean frequency of polydrug use, there appears to be a maturati effect but not a cohort size effect. For each year of age older or young than age 20, polydrug use declines by 800 occasions of use per 10 people, or a little under one occasion of use per person. In addition, f each year after 1976, polydrug use mean frequency increases at a ra of 507 occasions per person, or about one occasion of use for every tw people.

METHODOLOGICAL IMPLICATIONS

Ordinary least-squares regression with age, period, and cohort size as independent variables works quite well in explaining prevalence and mean frequency of self-reported alcohol, marijuana, and polydrug use. Use of the logarithmic transformation on the mean frequency of substance use generally results in increased explained variance and elimination, where otherwise present, of autocorrelated error. For prevalence, however, the logarithmic transformation has the opposite effect; it reduces the explained variance, and it does not help (and may worsen) the problem of autocorrelated error. The logarithmic transformation thus appears inappropriate for prevalence, but useful for the mean frequency of substance use.

For age and period effects, consideration of nonlinear effects is clearly warranted and for age, consistent with the Maturational Reform hypothesis, nonlinear effects in fact predominate. The presence of all three types of effects (age, period, and cohort size) for some dependent variables has important implications for model specification and analytic approaches. In particular, it suggests that the a priori elimination of one of the three types of effects produces a misspecified model. This can easily be avoided by replacing cohort, measured as year of birth, with cohort size, the more theoretically relevant variable, thereby operationalizing the three effects so that one is not a linear function of the other two.

THEORETICAL IMPLICATIONS

The Maturational Reform hypothesis receives strong and consistent support from the best-fitting equations in Tables 2 and 3. In all of the best-fitting equations, the age effect is the largest effect on the dependent variable, and in all but two of the best-fitting equations, the age effect is nonlinear, with a peak at age 20. For the two exceptions, prevalence of alcohol use with the logarithmic transformation and mean frequency of alcohol use without the logarithmic transformation, there is positive autocorrelated error in the equation and the explained variance is less than that in the alternative equation (unlogged prevalence or the natural logarithm of the mean frequency) for alcohol use. In the unlogged equation for prevalence, the presence of autocorrelated error is uncertain (Durbin–Watson, $d = 1.43$). In the logarithmic equation for mean frequency of alcohol use, there is no autocorrelated error (Durbin–Watson, $d = 1.97$). On the basis of these considerations, use of the unlogged equation for prevalence of alcohol use and the logarithmic equation for mean frequency of alcohol use seems preferable. With two (questionable) qualifications, then, the maturational reform hypothesis is supported for both prevalence and mean frequency of alcohol, marijuana, and polydrug

With three exceptions, the Easterlin cohort size hypothesis receive
support from the best-fitting equations in Table 3. The first exception i
the above-mentioned problematic equation for mean frequency of alcoho
use which does not include the logarithmic transformation. As note
above, the logarithmic equation is to be preferred here for reasons o
greater explained variance and elimination of autocorrelated error. Wit
the logarithmic equation, the Easterlin hypothesis is supported for mea
frequency of alcohol use. The two other equations which indicate n
cohort size effect are those for mean frequency of polydrug use, wit
and without the logarithmic transformation. Given their consistency an
the absence of autocorrelated error from both equations, it appears tha
the Easterlin hypothesis, then, is supported for five of the six dependen
variables (including all of the prevalence measures), but not for mea
frequency of polydrug use.

Period effects appear in all of the equations. The period effect is linea
and increasing for alcohol (again, with the exception of the problemati
equation for alcohol mean frequency in which the logarithmic transfor
mation is not used, and in which the period effect is nonlinear) an
polydrug use, but for marijuana prevalence and mean frequency th
period effect is nonlinear, with a peak in 1980. It is possible that nonlinea
period effects would be observed for alcohol and polydrug use as we
if more years of data were presently available (but the use of absolut
deviations from 1978 and 1979 make no difference). It is also possibl
that the nonlinear period effect for marijuana reflects a true, unique perio
phenomenon, a combination of increasing availability of all three sul
stances, with perhaps a significant change in attitudes toward marijuan
use from relative acceptance to increasing rejection of marijuana use a
acceptable behavior. Evidence for such a trend may be found in Flanaga
and Jamieson (1988, pp. 186–188). The same trend is not as evident f
alcohol (which, in one form or another, continues to be both legal an
widely accepted) or polydrug use (which continues to be widel
rejected).[10]

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[10] An anonymous reviewer of an earlier draft of this paper noted that in the analysis
age, period, and cohort (year of birth) effects, a linear effect of a single variable cann
technically be distinguished from the combined linear effects of the other two variabl
(see note 1 above) without some "side information" from, for example, theory or histo
It is only when all of the effects are nonlinear that interpretation is, from a purely met
odological view, unambiguous. In the present analysis, the effect of age is both nonlin
and consistent with theory (Maturational Reform), and the interpretation of the age eff
is thus doubly unambiguous. Cohort (year of birth) effects as such are excluded from t
model (see note 2 above) in favor of cohort size, which in the NYS sample is nonlinea
related to cohort (year of birth) and, more importantly, has the effect predicted by theo
(the Easterlin hypothesis). Only the period effects for alcohol and polydrug use are lin
and thus susceptible to ambiguity of interpretation, but in addition to the historical eviden
[illegible] it is intuitively more plausible to accept a linear peri

As Hobcroft, Menken, and Preston (1982) observe, period effects are measures of our ignorance, in contrast to age effects, which they regard as a generally good proxy for the maturation process (physiological development and exposure to certain social influences or social norms). Although we have some theoretical basis for understanding age (the Maturational Reform hypothesis) and cohort size (the Easterlin hypothesis) effects, we have no theoretical basis (but some historical basis) for understanding the presence of period effects iin the data, particularly period effects which are different for marijuana as contrasted with alcohol and polydrug use. While further elaboration of the model to explain the presence of the period effects is beyond the scope of the present paper, it would be a useful endeavor for future research in this area.

CONCLUSIONS

Substance use, like other forms of criminal or delinquent behavior, appears to be subject to a Maturational Reform effect. Unlike other forms of criminal or delinquent behavior, which tend to peak at midadolescence (Farrington, 1986; Gold, 1970; Hirschi, 1969), however, substance use appears to peak at the end of adolescence and the beginning of adulthood, around age 20. Again, like other forms of criminal or delinquent behavior (Maxim, 1985; Pullum, 1978; Smith, 1986), substance use appears to be affected by cohort size, as predicted by Easterlin (1987). In contrast, however, to other forms of criminal or delinquent behavior (Menard, 1987) there is a consistent, *increasing* period trend in substance use from 1976 to 1980 and a continuing positive trend after 1980 in alcohol and polydrug use.

The overall image that emerges from this analysis is that substance use does differ in some respects (age of maximum prevalence and mean frequency, presence of an increasing period trend) from other forms of criminal and delinquent behavior. In future research, it would be worth determining whether such patterns are unique to substance use or also characteristic of other consensual or "victimless" offenses. As more data become available, it would also be worthwhile to extend this analysis to include a wider range of ages and time periods. Finally, introduction of other theoretical variables to help explain the period effects (and also, perhaps, the age and cohort size effects) would be an appropriate focus for future research.

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effect than a combination of otherwise absent linear age and cohort (year of birth) effects. The possibilities remain that the linear period trends for alcohol and polydrug use reflect a combination of linear age and cohort (year of birth) effects and that the effects of cohort (year of birth) other than cohort size influence the dependent variables, but these possibilities are purely speculative and have neither the theoretical nor the historical support

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APPENDIX F

SOCIAL CLASS AND DELINQUENT BEHAVIOR

(ELLIOTT AND HUIZINGA, 1983)

ABSTRACT • • •

This article addresses the question of whether or not a more adequate measure of self-reported delinquency applied to a representative national sample would reveal class differences in delinquency that have not been found in earlier self-report studies. The methodological criticisms of earlier self-report measures are reviewed, a new self-report measure is described, annual sex-by-class-specific prevalence and incidence rates based on this new measure are presented for a national youth panel for the years 1976 through 1980, and the implications of the class findings are discussed. Class differences in both prevalence and incidence are found for serious offenses. For males, class differences are also found in the incidence of nonserious offenses and global delinquency. Class differences are more pervasive and stronger when using an incidence as opposed to a prevalence measure. Criticisms of earlier self-report measures appear justified, calling into question conclusions about the distribution of delinquency in the adolescent population which are based on prior self-report data.

Social Class and Delinquent Behavior in a National Youth Panel

1976-1980

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At the heart of the current controversy over the relationship between delinquency and social class are some fundamental questions about the conceptualization and measurement of delinquency. Conceptually, most researchers acknowledge that self-reported measures are more direct measures of delinquent behavior than arrest records. However, studies

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utilizing self-reported measures of delinquency generally find no class differences in delinquency, whereas those employing official arrest or court records generally conclude that there are class differences. This inconsistency is taken by many as evidence that one or the other of these measures is seriously deficient. As a result, there have been a number of recent attempts to resolve this apparent discrepancy in class findings and to establish clearly whether there are any true class differences in the incidence and prevalence of delinquent behavior.

Attempts to reconcile the class findings generated by these two measures have taken several forms. First, there are those who argue that the conceptual differences between the two measures are such that there is no reason to expect similar class distributions (Gould, 1969, 1981). Both are assumed to be valid, but each is a measure of a different phenomenon. Frequently, those who take this position argue that there are no class differences in delinquent behavior and that class differences found in official data are the result of a systematic class bias in the official processing of juvenile offenders.[1] Second, there are those who challenge the claim that there are substantial class differences in official delinquency data (Hindelang et al., 1978, 1979, 1981; Hirschi et al., 1981; Tittle and Villemez, 1977; Tittle et al., 1978). Hindelang et al. (1979, 1981) thus argue that there is a weak class-delinquency relationship with both measures. Third, there are those who argue that the self-reported measures of delinquency employed in earlier studies were deficient and, if corrected, might reveal a substantial class differential (Elliott and Ageton, 1980). Our concern in this report is with this last argument; not because the other positions lack merit or can be rejected, but because the criticisms of prior self-reported measures involve truly serious issues. Until these issues are resolved, all research findings based on self-reported delinquency measures will be suspect. The problem is broader than a concern over the class-delinquency relationship, for it extends to the use of self-reported measures in describing the distribution of delinquent acts on any variable (for example, age, sex, race, or place of residence), and to tests of theoretical propositions utilizing such measures.

A major concern about earlier self-reported delinquency (SRD) measures involves problems in the construction and scoring of these instruments that have implications for their validity and interpretation. We

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and third years of the study was received from the National Institute for Juvenile Justice and Delinquency Prevention, U.S. Department of Justice (Grant 78-JN-AX-0003). Points of view or opinions expressed in this article are those of the authors and do not necessarily represent the official position or policies of the Department of Health and Human Services or the Department of Justice. Please address all communications to Delbert S. Elliott, Director, Behavioral Research Institute, 2305 Canyon Boulevard, Boulder, Colorado 80302.

are less concerned about those problems inherent in the self-report method itself. The available evidence clearly establishes the reliability of self-reported measures and, while problems of accurate recall, forward and backward telescoping, and deliberate falsification remain, these potential threats to the validity of self-reported measures do not appear to be serious (Hindelang et al., 1981).[2]

Criticisms of the construction of SRD measures center on three issues: (1) the limited representativeness of items (offenses) selected for SRD measures; (2) truncated or ambiguous response sets; and (3) the inappropriate and misleading aggregation of items into scales.[3] The immediate question is whether or not correction of these problems would influence the class-delinquency relationship as established by prior self-reported research.

In an effort to answer this question, we developed a new SRD measure that addressed each of these construction problems (Elliott and Ageton, 1980). This measure was conceptualized as a parallel measure to official arrest records and includes 46 items selected so as to be representative of the full range of official acts for which juveniles could be arrested. The set included all but one of the UCR Part I offenses (homicide was excluded), 60% of Part II offenses, and a wide range of UCR "other" offenses. The response set employed was an open-ended frequency estimate for the past year. We also attempted to construct a set of behavioral scales having both conceptual clarity and empirical validity.

The administration of this new SRD measure to a national probability sample of adolescents in 1977 revealed a class differential in the incidence of total delinquency and crimes against persons. There was evidence in the analysis of these data that the representativeness of the items in the SRD measure and the open-ended frequency response accounted, at least in part, for the significant class finding. If serious items had been omitted and/or responses rescored using the earlier truncated response sets (for example, "never," "once or twice," "three or more times"), no significant class differences would have occurred. It also appeared that the way in which offense items were selected and combined into summary measures may have resulted in misleading interpretations of earlier class-delinquency analyses (Elliott and Ageton 1980). These results suggest that the earlier class-delinquency findings, based on self-reported measures, ought to be interpreted with caution, taking into account the limited representativeness of offenses included in these measures and the limited frequency distributions they generated. The error in prior studies is likely to be much greater for estimates of the incidence of delinquent behavior as compared to estimates of prevalence. However, the problem of unrepresentative item sets applies equally to prevalence and incidence estimates.

We have now completed five annual waves of data collection with the youth panel in the National Youth Survey and are in a position to make a more definitive analysis of class differences in the incidence and prevalence of delinquent behavior with this new SRD instrument. The data presented here are more extensive, involve controls for sex and race, and permit an analysis of the stability or change in the class distribution of delinquency over a five-year period. In this period, the panel matured from ages 11-17 in 1976 to ages 15-21 in 1980.

THE NATIONAL YOUTH SURVEY

THE SAMPLE

The National Youth Survey (NYS) employed a probability sample of households in the continental United States based on a self-weighting, multistage, cluster sampling design. The sample was drawn in late 1976 and contained approximately 2360 eligible youth aged 11-17 at the time of the initial interview. Of these, 1725 (73%) agreed to participate in the study, signed informed consents, and completed interviews in the initial (1977) survey. An age, sex, and race comparison between nonparticipating eligible youth and participating youth indicates that the loss rate from any particular age, sex, or racial group appears to be proportional to that group's representation in the population. Further, with respect to these characteristics, participating youth appear to be representative of the total 11-through-17-year-old youth population in the United States as established by the U.S. Census Bureau (Elliott et al., 1983).

Respondent loss over the five surveys was relatively small. The cumulative loss over the total period was 13.4%. Thus, the sample N for the fifth (1981) survey was 1494. A comparison of participants and nonparticipants at waves 2 through 5 revealed some selective loss by ethnicity, class, and place of residence (urban/suburban/rural) at waves 2 and 3, a selective loss by sex at wave 4, and by age at wave 5. There did not appear to be any selective loss relative to self-reported levels of delinquency on any wave.

While the comparison of participants and nonparticipants at each wave after the first revealed some small but significant differences, a comparison of those participating at each wave with the initial sample at wave 1 revealed no significant differences by age, sex, race, class, place of residence, or level of delinquency. The selective loss was thus very small and did not influence the underlying distribution on these variables (as established on the first survey) in any substantial way. We thus conclude that the representativeness of the sample with respect to these variables was not affected in any serious way by the loss over the five surveys. For a more detailed description and documentation of the sample, see Elliot et al. (1983).

DELINQUENCY SCALES

In addition to prevalence and incidence (frequency) estimates for each offense item included in the SRD measure, prevalence and incidence estimates for scales representing more general classes of delinquent acts were obtained. Incidence estimates for these scales were calculated by summing the reported frequencies for the separate offense items included in each scale. Prevalence estimates involved a calculation of the proportion of youth in the population or in each subgroup who reported involvement in at least one of the offenses included in a given scale.[4]

A word of caution is necessary relative to the interpretation of findings involving scales. Whenever individual offense items are combined into summary measures, some information is lost. There is thus some danger that incorrect or misleading interpretations may result, particularly when differences at the item level have been ignored. There are several reasons for this.

First, the use of scales may obscure and even reverse the direction of important differences occurring at the offense level. For example, there are substantial racial differences in the reported frequency of sexual assault, aggravated assault, and simple assault on parents and teachers. Yet when these separate items are combined into a general assault scale, there is no apparent difference in the rate of assault by race. This is because the direction of the race differential for simple assault is the reverse of those for aggravated assault and sexual assault, and its frequency is substantially greater than either of these offenses (Elliott and Ageton, 1980). Thus, the unqualified conclusion that there are no racial differences in the frequency of assault would clearly be misleading.

Second, when offenses with very high incidence levels in the population are included in scales with low and moderate incidence offenses, the high incidence offense can "swamp" the other offenses and essentially determine the social correlates of the entire scale. Under these circumstances, it would be incorrect to assume that the scale correctly depicts the distributional characteristics of all, or even a substantial number of the specific offenses included in the scale. This is one of the difficulties involved in combining relatively serious and nonserious offenses in a scale. The nonserious offenses tend to be high-frequency offenses, while serious offenses are typically low-frequency offenses; therefore, the relatively nonserious offenses tend to dominate the distributional characteristics of the scale. This problem is inherent in prevalence and variety prevalence scales, as well as incidence scales. Seriousness weighting schemes may or may not correct for this differential magnitude and, in turn, may raise new problems for interpretation, since the scale scores no longer reflect simple frequency counts of a class of events.

Finally, the conceptual rationale for determining the item content of a scale is an important element in the interpretation of the distributional characteristics of that scale. For purposes of generalization, the set of offenses included in a scale should represent or exhaust the domain of behaviors implied by that scale's conceptualization. Unrepresentative sets of items have often been used to generalize to a conceptual class of behaviors; in fact, many scales have offense items that lack even face validity with respect to the scales' conceptualization.

In this study, three sets of delinquency scales were used, each involving a different level of offense homogeneity and seriousness. The most homogeneous scales are called offense-specific. Each of these involves a very tight, homogeneous grouping of offense items, both with respect to the nature of the acts involved and their degree of seriousness. The second set, offense-category scales, involves more general classes of behaviors and more internal variability with respect to seriousness. The final set, the summary scales, involves the most general and heterogeneous classification of offenses. The specific scales included in each of these sets are identified in Figure 1, together with the offense items in each scale. A more detailed description of the construction of these scales can be found in Elliott et al. (1983).

The strategy in the development of these sets of scales is to encourage the examination of individual offense items first, followed by a consideration of the small homogeneous scales, more general scales, and finally, the more global measures of delinquency. This process should result in an awareness of the exceptions to generalizations based on summary measures of delinquency, and a more complete understanding of the findings relative to the social class-delinquency relationship.

MEASURES OF SOCIAL CLASS

The principal measure of social class is the Hollingshead two-factor index (Hollingshead and Redlich, 1958) as applied to the principal wage-earner in each youth's family. Hollingshead classes 1 and 2, involving primarily professional/managerial occupations and college level educations, are collapsed to make the Class I (middle-class) category in the tables. Hollingshead class 3, primarily owners of small businesses, clerical workers, and persons in sales occupations and skilled manual occupations with high school or some college completed, constitutes the Class II (working-class) category. Hollingshead classes 4 and 5, primarily semiskilled persons and those in unskilled manual occupations with high school or lower levels of education, make up the Class III (lower-class) category.

To facilitate the interpretation of these three class levels, Class I is referred to as middle-class, Class II as working-class, and Class III as lower-class. While these descriptive labels generally reflect occupational and educational differences in the class distribution, it is acknowledged that the exact boundaries between these groups are somewhat arbitrary. The classification for each respondent is a constant over the study period. Changes in the class distribution over time are purely a function of selective loss, not a change in how individual respondents were classified.

In addition to the Hollingshead classification, all subjects were classified on the Duncan (1961) Socioeconomic Index for occupations. These two measures of social class were strongly related (r = .76) but not identical. The relationship between delinquency and class appeared to be unrelated to the specific class measure used; that is, the same general pattern of findings emerged for both measures. The findings presented here are those based on the Hollingshead classification.

GENERALIZING TO THE AMERICAN ADOLESCENT POPULATION

The National Youth Survey involves a probability sample of American youth aged 11-17 in 1976, and class differences in the sample may be generalized to the total youth population. Since the sample constitutes a youth panel, the appropriate age range for the youth population changes each year as the panel matures. The 1976 estimates are thus generalized to youth aged 11-17, while the 1980 estimates are generalized to youth aged 15-21.

These generalizations from the sample to the total youth population involve both incidence and prevalence rates and are based on statistical tests for the significance of differences in group means and proportions. These tests indicate the probability that a difference as large as that observed between two class groups in the sample would occur by chance, if there were no true differences in incidence or prevalence in the population groups from which the samples were drawn. When this probability is sufficiently low (less than .05 in this report), we conclude that there is a difference between these class groups in the adolescent population.

There are several issues associated with the calculation and interpretation of these tests of significance. First, standard parametric tests of significance are based on simple random sample (SRS) assumptions. Since the NYS sample is a stratified cluster sample, these tests must be adjusted for the clustering effects inherent in the sample.[5] While it is possible to make this adjustment for each specific comparison made in the report, the *complexity of this adjustment and the number of comparisons* involved render this an impractical solution. As a result, we have followed a procedure suggested by Kish (1965) in which the critical

TABLE 1
Delinquency Scales—National Youth Survey

fense-Specific ales	Offense-Category Scales	Summary Scales	
lony Assault) Aggravated assault) Sexual assault) Gang fights	Illegal Services (1) Prostitution (2) Sold marijuana (3) Sold hard drugs	*School Delinquency (1) Damaged school property (2) Cheated on school tests (3) Hit teacher (4) Hit students (5) Strongarmed students (6) Strongarmed teachers (7) Stole at school (8) Skipped classes	*General Delinquency A + (1) Damaged family property + (2) Damaged school property + (3) Damaged other property (4) Stole motor vehicle (5) Stole something GT$50 (6) Bought stolen goods (7) Runaway + (8) Lied about age (9) Carried hidden weapon (10) Stole something LT$5 (11) Aggravated assault (12) Prostitution (13) Sexual intercourse (14) Gang fights (15) Sold marijuana + (16) Hitchhiked illegally (17) Hit teacher (18) Hit parent (19) Hit students
nor Assault) Hit teacher) Hit parent) Hit students	*Public Disorder (1) Hitchhiked illegally (2) Disorderly conduct (3) Public drunkenness (4) Panhandled (5) Obscene calls		
bbery) Strongarmed students) Strongarmed teachers) Strongarmed others			
lony Theft) Stole motor vehicle) Stole something GT$50) Broke into bldg/vehicle) Bought stolen goods	*Status Offenses (1) Runaway (2) Skipped classes (3) Lied about age (4) Sexual intercourse	*Home Delinquency (1) Damaged family property (2) Runaway (3) Stole from family (4) Hit parent	
Minor Theft 1) Stole something LT$5 2) Stole something $5-50 3) Joyriding	Crimes Against Persons (1) Aggravated assault (2) Gang fights (3) Hit teacher (4) Hit parent (5) Hit students (6) Sexual assault (7) Strongarmed students (8) Strongarmed teachers (9) Strongarmed others	Index Offenses (1) Aggravated assault (2) Sexual assault (3) Gang fights (4) Stole motor vehicle (5) Stole something GT$50 (6) Broke into bldg/vehicle (7) Strongarmed students (8) Strongarmed teachers (9) Strongarmed others	(20) Disorderly conduct (21) Sold hard drugs (22) Joyriding + (23) Bought liquor for minor (24) Sexual assault (25) Strongarmed students (26) Strongarmed teachers (27) Strongarmed others + (28) Evaded payment + (29) Public drunkenness (30) Stole something $5-50 (31) Broke into bldg/vehicle (32) Panhandled + (33) Skipped classes + (34) Didn't return change + (35) Obscene calls
*Damaged Property (1) Damaged family property (2) Damaged school property (3) Damaged other property	General Theft (1) Stole motor vehicle (2) Stole something GT$50 (3) Bought stolen goods (4) Stole something LT$5 (5) Stole something $5-50 (6) Broke into bldg/vehicle (7) Joyriding		General Delinquency B Same as General Delinquency A except the + items omitted.
Drug Use (1) Hallucinogens (2) Amphetamines (3) Barbiturates (4) Heroin (5) Cocaine			

*Not available for 1977.

values of the t-distribution corresponding to standard probability levels are modified to take into account an average or representative design effect (a statistic that reflects the effect of clustering on variance estimates). With this modification in the critical values, standard formulas and existing computer programs are used to compute observed values of t, and in tests of hypotheses these are compared with the modified critical values.[6] In any case, the reader should note that the conventional probability levels associated with particular t-values are not used in this report.

A second issue involves the highly skewed distributions that are typical for prevalence and incidence estimates based on self-reported data. What appear to be substantial differences in subgroup means are often not statistically significant due to very large variances. The combination of unequal variances and unequal sample sizes precluded the use of standard analysis of variance tests. We have thus relied on multiple t-tests for groups with unequal variances as the standard test for differences in incidence and prevalence.[7]

A final issue concerns the presence of some very high frequencies of reported delinquency on the part of some respondents. In a few instances, respondents were judged to be unreliable or unresponsive on the whole set of SRD items and were assigned no scores for these items. Aside from this adjustment, however, no individual item-level adjustments to reported frequencies were made. This decision was based on a detailed review of all extreme scores reported.[8] As a consequence of this decision, one or two persons reporting extreme scores may produce a substantial difference in subgroup means if the group sizes are small (the minimum N for estimates in this report is 171). While extreme scores may have a dramatic effect on the mean incidence score, they also have a corresponding effect on the variance for that mean and seldom result in a significant difference.

FINDINGS

The examination of class differences involves individual offenses, as well as offense scales. Findings at the individual offense level are summarized briefly, while the major presentation of findings focuses upon class differences at the scale level. Instances where the class distribution for individual items within a scale are significantly different from the class distribution of the scale are noted.

There are significant class differences (prevalence and incidence rates) on substantially more individual offenses for males (20-25% of offenses) than females (5-10%) in each year. The over-time class trends are also more stable and consistent for males than females. The dominant pattern of class differences for both sexes involves lower rates for

307

middle-class youth as compared to working- and/or lower-class youth. There is only one offense for which middle-class youth (both sexes) report significantly higher prevalence rates than working- and/or lower-class youth for most years (disorderly conduct). There are a number of offenses for which middle-class prevalence rates are consistently the highest among the three class groups, but these differences are only occasionally significant. These offenses include: lied about age, cheating on tests, skipping classes, drunkenness, buying liquor for a minor, evading payment, and stole from family. All significant class differences in incidence involve lower rates for middle-class as compared to working-/lower-class youth, and there are no offenses for which middle-class incidence rates are consistently higher than working- or lower-class rates. Both the magnitude and the pervasiveness of class differentials are greater for males as compared to females and when employing an incidence measure of delinquency as compared to a prevalence measure.

PREVALENCE RATES FOR DELINQUENCY SCALES

Offense-Specific Scales. Prevalence rates for males and females by class on each of the delinquency scales are presented in Table 1. For both sexes, there is a significant and substantial (1:2 or greater) middle- to lower-class differential for four of the five survey years on the felony assault scale. For two of these four years, the middle- to working-class differential is also significant and substantial (1:2 or greater) for males; this differential is significant only in 1977 for females. The direction and magnitude of the middle- to lower-class differential is similar for each of the three offenses making up this scale, and this finding represents fairly this class of offenses: Lower-class youth are more likely to report some involvement in a serious assault offense than are middle-class youth.

For males, there are also significant and substantial class differences on the robbery and felony theft scales for 1978, 1979, and 1980. For the robbery scale, it is the middle- to working-class difference that is significant; for the felony theft scale, both the middle- to- working- and middle- to lower-class differences are significant. There is some evidence here that class differences are increasing over time as the panel moves through adolescence and into early adulthood. These two scales depict fairly the direction of differentials observed for most of the items included in these scales.

There are no other offense-specific scales for which significant class differences are found. The class differentials on the remaining scales are generally 1:1 across all five years. Together, these findings offer clear evidence that there are substantial class differences in the prevalence of serious offenses, but not in the prevalence of nonserious offenses.

Offense-Category Scales. There are no particularly strong class differences for the offense-category scales. There are a number of significant middle- to lower-class differences for the crimes-against-persons scale for both sexes, but they are not very strong or consistent over the five-year period and are explained by the relatively strong class differentials observed for the felony assault scale, which is included in this more general scale. The felony theft differences (for males) are not strong enough to carry the general theft scale.

There is also a significant class difference on the public disorder scale for females for three of the five years. The direction of this middle- to lower-class differential is consistent for both sexes across all five years. This scale is heavily influenced by the disorderly conduct offense item for which there are significant differences for both sexes, but more consistently for females. This differential is not uniform among the other items in this scale (hitchhiked, drunkenness, panhandled, and obscene phone calls). As a result, this scale does not reflect a uniformly higher prevalence on the part of middle-class females for all public disorder offenses.

Summary Scales. Given the class differences in prevalence on the felony assault and theft scales, it is not surprising that there are significant class differences on the index offense scale. This occurs from 1977 through 1979 for males. For all three years, both the middle-/working- and middle-/lower-class differences are significant, with all the ratios close to 1:2. For females, there are significant class differences on the index offense scale only for 1976 and 1977, and only for the middle- to lower-class comparison. Again, these class ratios are approximately 1:2. There are no consistent class differences on the remaining summary scales, although differences on the school and general delinquency scales are significant for particular years.

PREVALENCE SUMMARY

There does not appear to be a class differential in the prevalence of delinquency in general; there are very few significant differences for either general delinquency measure, and the sizes of the class ratio are all close to 1:1. There are significant class differences for males on serious offenses; middle-class males are less likely to be involved in serious offenses than are working- or lower-class males. Middle-class females are also less likely to be involved in serious offenses than are working- and lower-class females, but the pattern is less consistent and the differentials are often smaller. This may be the result of generally low rates of prevalence for females as compared to males on serious offenses. All female class groups typically have prevalence rates for felony offenses that are lower than those of middle-class males.

There appears to be a slight trend over time toward increasing class differences in the prevalence of serious offenses for males. There are few class differences in prevalence in 1976, but there are an increasing number of significant differences, and the magnitude of the differentials are increasing through 1979. In 1978 and 1979 there are also significant class differences on the General Delinquency-B scale. Both the number and magnitude of significant class differences decline again in 1980.

INCIDENCE RATES FOR DELINQUENCY SCALES

Offense-Specific Scales. Class differences in incidence rates for delinquency scales are presented in Table 2. There is only one scale, felony assault, for which there is a significant and consistent class differential in incidence rates for females. This difference involves a lower incidence for middle- as compared to lower-class females. For two years (1976 and 1979), the difference between working- and lower-class females is also significant. This same pattern of class differences is found for two of the three specific items making up the felony assault scale. For the other item (sexual assault), the incidence rate is close to zero for all class groups for every year except 1976.

While there are fewer significant class differences for incidence, as compared to prevalence rates for females, the opposite is true for males. There are significant and consistent class differences on the felony assault, minor assault, and felony theft scales for males. The significant differentials for both assault scales involve lower rates for middle- as compared to lower-class males; for the felony theft scale, both the middle- to lower- and middle- to working-class differences are significant for three of the five years, with middle-class males reporting the lower rates. The pattern of male class differences for all three scales is replicated at the item level, although not all differences at the item level are statistically significant. The class differences observed at the scale level may thus be generalized to the entire class of items contained in each scale.

Offense-Category Scales. Given the relatively strong class differences observed for males on the felony and minor assault scales and the felony theft scale, it is not surprising that there are significant class differences for males on the more general crimes-against-persons and general theft

TABLE 2

Prevalence of Delinquent Behavior in the National Youth Panel: 1976-1980 Self-Reported Delinquency Scales by Social Class and Sex

A. Males

Offense-Specific Scales (N)	1976 (196) Middle %	1976 (266) Working %	1976 (399) Lower %	Sig*	1977 (194) Middle %	1977 (256) Working %	1977 (376) Lower %	Sig.	1978 (190) Middle %	1978 (253) Working %	1978 (370) Lower %	Sig.	1979 (176) Middle %	1979 (233) Working %	1979 (348) Lower %	Sig.	1980 (175) Middle %	1980 (228) Working %	1980 (334) Lower %	Sig.
1. Felony assault	15.3	22.9	27.4	b	6.2	22.1	20.0	ab	8.4	13.4	17.6	b	7.4	15.9	17.8	ab	11.4	11.5	14.4	
2. Minor assault	57.4	65.0	66.0		51.6	61.7	60.2		41.6	50.2	50.0		30.0	39.1	42.2	b	26.9	29.4	32.3	
3. Robbery	4.6	7.9	8.6		4.1	8.2	4.9		2.1	8.3	5.1	a	1.1	5.6	5.2	ab	0.6	4.8	2.1	a
4. Felony theft	15.8	13.9	16.5		13.9	18.8	17.3		10.0	21.3	18.4	ab	7.4	15.9	16.7	ab	5.7	15.4	14.4	ab
5. Minor theft	22.5	25.2	25.6		26.3	27.0	25.1		24.3	23.7	22.0		19.9	21.9	19.0		24.0	19.3	17.4	
* 6. Damaged property	38.3	47.4	44.5		35.6	36.4	42.8		32.1	38.4	30.1		27.3	24.9	27.0		24.6	24.6	21.3	
** 7. Hard drug use	5.6	6.8	3.5		7.7	8.6	7.7		13.2	16.6	10.6		15.4	21.5	14.9		21.7	25.0	14.7	c
8. Fraud	—	—	—		—	—	—		—	—	—		6.3	8.6	9.5		4.6	8.8	9.0	
Offense-Category Scales																				
9. Illegal services	6.7	6.	5.8		10.3	11.4	10.1		13.8	17.8	14.1		10.3	19.3	15.2	a	14.9	20.7	14.7	
+10. Public disorder	49.5	45.7	43.4		57.4	47.0	45.9		57.1	55.3	47.0		59.1	55.4	47.6	b	61.7	52.2	48.5	b
11. Crimes against persons	60.5	67.3	69.6		52.6	63.0	63.2	b	42.9	53.0	53.0		31.3	45.1	47.8	ab	25.7	33.9	38.6	
12. General theft	28.6	29.0	30.8		29.4	31.6	29.1		29.1	32.0	29.0		23.3	28.6	26.2		26.9	25.0	24.3	
+13. Status Offenses	47.4	52.1	52.7		51.9	50.9	50.0		53.0	63.7	63.9		53.9	62.0	67.2		64.0	65.1	65.1	
Summary Scales																				
14. School delinquency	75.9	82.7	81.0		79.2	75.5	76.9		73.5	75.9	69.1		69.3	70.0	60.9		67.4	57.9	55.0	b
15. Home delinquency	35.7	44.7	42.1		30.7	31.8	38.8		22.1	30.8	25.7		19.3	19.7	21.6		17.1	17.1	14.4	
16. Index offenses	23.5	27.4	32.0		12.4	28.0	27.0	ab	13.2	22.1	22.4	ab	11.4	22.3	24.5	ab	13.7	18.1	18.9	
17. General delinquency B	74.1	77.7	80.4		71.7	75.4	78.3		66.8	77.1	74.3	a	66.9	76.3	79.3	b	72.0	72.7	76.0	
+18. General delinquency A	85.5	86.0	88.5		81.2	84.0	87.5		81.7	87.3	83.2		79.4	87.5	86.6		85.7	81.7	84.3	

B. Females

Offense-Specific Scales (N)	(195)	(242)	(321)		(195)	(235)	(307)		(192)	(228)	(304)		(184)	(222)	(298)		(171)	(223)	(285)	
1. Felony assault	5.2	7.9	10.9	b	1.5	6.4	9.8	ab	2.6	3.5	7.2	b	4.4	5.9	7.4		1.8	4.5	6.0	b
2. Minor assault	30.3	32.2	39.9		17.6	23.4	30.3	b	17.7	21.9	23.9		12.5	17.1	20.8	b	7.6	8.1	13.7	
3. Robbery	1.0	1.2	4.1		1.0	0.9	2.0		1.0	0.9	1.0		0.5	0.9	0.7		0.6	1.4	0.4	
4. Felony theft	7.7	6.6	7.8		4.6	3.8	5.5		2.6	2.6	3.9		2.7	2.7	3.7		3.5	3.1	4.6	
5. Minor theft	21.0	12.0	11.6	ab	14.4	14.0	15.3		10.0	8.8	12.4		7.1	7.2	9.4		8.8	9.4	7.0	
* 6. Damaged property	24.1	26.9	25.2		19.3	20.4	16.6		13.5	13.6	15.7		7.6	9.5	8.4		7.7	6.3	7.4	
** 7. Hard drug use	4.1	6.6	5.0		6.2	6.0	5.6		6.8	6.6	8.5		13.0	13.5	15.1		15.2	12.6	13.7	
8. Fraud	—	—	—		—	—	—		—	—	—		4.4	2.3	1.7		4.1	1.8	2.1	
Offense-Category Scales																				
9. Illegal services	2.6	3.3	4.4		1.5	3.9	5.3	b	5.7	4.4	5.3		5.4	4.1	5.7		4.1	5.4	4.9	
+10. Public disorder	44.6	38.8	33.0	b	44.2	37.2	33.0		39.6	43.0	34.4		51.1	50.0	38.6	b	53.2	46.6	36.1	bc
11. Crimes against persons	31.4	33.1	40.8		18.7	24.8	31.5	b	18.2	22.8	25.8		13.6	18.6	22.8	b	7.6	10.3	15.5	b
12. General theft	22.1	14.5	14.7		16.4	19.7	16.0		10.0	9.7	13.1		8.7	9.9	10.4		9.9	11.7	8.1	
+13. Status offenses	44.0	42.1	41.0		40.2	44.0	46.8		50.4	52.0	48.5		56.9	59.4	52.7		61.5	61.1	54.1	
Summary Scales																				
14. School delinquency	67.2	63.6	66.6		70.9	68.4	67.4		62.5	61.8	60.5		65.2	60.8	51.3	a	66.7	51.6	46.8	ab
15. Home delinquency	30.3	30.2	29.0		18.5	24.1	21.7		19.8	16.7	19.9		13.6	14.4	13.1		11.2	9.4	12.6	
16. Index offenses	7.2	8.3	14.0	b	4.6	7.7	10.8	b	4.7	4.8	8.9		4.9	6.3	7.4		3.5	6.7	7.7	
17. General delinquency B	56.5	52.9	52.9		53.4	47.4	53.1		46.0	52.6	56.4		53.6	55.7	55.1		58.9	53.2	54.1	
+18. General delinquency A	76.2	69.9	70.7		69.8	68.9	69.2		70.4	72.8	69.5		80.3	74.7	73.7		82.6	76.1	73.5	b

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* a = middle vs. working, $p \leq .05$, $t = 2.32$; b = middle vs. lower, $p \leq .05$, c = working vs. lower, $p \leq .05$

+ = 1977 estimates are based upon NIMH sample only.

** = Mean categorical score: Never = 1; once or twice = 2; once every 2-3 months = 3; once a month = 4; once every 2-3 weeks = 5; once a week = 6; 2-3 times a week = 7; once a day = 8; 2-3 times a day = 9.

scales. On the crimes-against-persons scale, it appears to be the middle- to lower-class difference that is most consistently significant. The middle- to working-class difference is also significant for 1977 and 1979 and is close to being significant for the other years as well. It seems appropriate to conclude that middle-class males commit fewer assaults than do either working- or lower-class males. Such a conclusion is consistent with the class differential found on all assault items.

The class difference observed for theft offenses appears to involve a lower incidence on the part of middle-class males relative to working-class males. While the lower-class rates are similar to the working-class rates for four of the five years on this scale, none of the middle- to lower-class rates is statistically significant. Working-class males have the highest incidence rate on most of the theft items. Given the regularity of this pattern, there is some indication that theft may be more characteristic of working- than either middle- or lower-class males. None of the working- to lower-class differences are statistically significant, however.

There are also significant class differences in the incidence of illegal services and status offenses for males. The pattern of significant differences on both scales indicates that middle-class males commit fewer of these offenses than do working-class males. Lower-class incidence rates are comparable to those for working-class males, but these rates are statistically different from middle-class rates only in 1979.

Summary Scales. For the years 1976 through 1979, there are significant class differences in the incidence of index offenses for males. The typical pattern, with low rates for middle-class as compared to working- and lower-class youth, is clearly evident here. The data thus indicate consistent class differences in the incidence of serious offenses. This pattern was evident at the item level, the offense-specific and offense-category scale levels, and on the more global index-offense scale. Not only are these class differences statistically significant, they are also substantial, with lower- and working-class male rates ranging between two and ten times those of middle-class males.

There are also significant class differences on the two general measures of delinquency for males. For three of the years, the rates of middle-class males are significantly lower than those of working- and lower-class males on the General Delinquency-B scale. The middle-/working-class differential on the more inclusive General Delinquency-A scale is also significant for these years. The magnitude of these differences is not as great as that observed for index offenses, but it is substantial. The trends in class differences observed for these global scales are found at the item level and at the offense-specific scale level for nonserious offenses, but were not consistently significant at these levels.

SUMMARY

Middle-class youth (both sexes) are less likely to be involved in serious offenses than are working- or lower-class youth. Further, even when they are involved in serious crimes, middle-class youth commit fewer offenses than do working- and lower-class youth. There are substantial class differences in both the prevalence and incidence of serious crime.

When the focus is shifted from serious offenses to delinquent acts in general, there are few significant class differences in the proportions of youth reporting one or more delinquent acts. The frequency at which delinquent acts are committed does vary by class for males, however. Middle-class males commit substantially fewer delinquent acts each year than do working- and lower-class males. Females of all classes have relatively low rates of offending compared to working- and lower-class males, but there is no consistent pattern of class differences in female incidence rates.

CONTROLLING FOR RACE

It is possible that the class findings noted above are confounded with differences by race. An interaction effect between race and class was observed for crimes against persons in an earlier analysis of 1976 data (Elliott and Ageton, 1980). To control for the possible influence of race, the above class analyses with delinquency scales were replicated for whites only.[9] With few exceptions, the same pattern of class differences was found.

Several differences that were significant for the total NYS sample failed to reach significance for the white sample. At the same time, several differences that were not significant for the total sample became significant for the white sample. The net effect of these changes was that there were four fewer significant differences with the male white sample than with the total male sample. The effects of these changes on earlier class findings are as follows. First, with regard to prevalence rates in the white sample, there is stronger evidence for a significant class difference in minor assault; a weaker (but still substantial) class difference in robbery; and a stronger class difference in crimes against persons. Second, with regard to incidence rates in the white sample, the evidence for class differences in general theft and status offenses for males was considerably weaker.

In general, limiting the sample to whites had only minor effects on class means and proportions, and on significance levels for class differences. While these minor changes sometimes pushed significance levels slightly over or under the critical t-values utilized, there was no basic change in the direction or magnitude of class differences in either of the

TABLE 3

Incidence of Delinquent Behavior: 1976-1980 Self-Reported Delinquency Scales by Social Class and Sex

Rate Per 100 Youth

Offense-Specific Scales	1976				1977				1978				1979				1980			
(N)	(196)	(264)	(399)		(194)	(256)	(376)		(190)	(253)	(370)		(176)	(233)	(348)		(175)	(228)	(334)	
	Middle	Working	Lower	Sig*	Middle	Working	Lower	Sig.	Middle	Working	Lower	Sig.	Middle	Working	Lower	Sig.	Middle	Working	Lower	Sig.
1. Felony assault	28	76	103	ab	10	246	142	b	20	60	53	b	23	82	96		18	54	56	b
2. Minor assault	333	1259	1524	b	187	514	534	ab	190	378	487	b	118	440	280	b	116	134	286	
3. Robbery	8	52	69	ab	26	44	161		30	75	49		6	45	28		29	20	8	
4. Felony theft	54	182	66		28	139	293	a	15	162	91	ab	15	99	169	ab	14	97	82	b
5. Minor theft	107	220	348		94	415	137		55	246	126		99	209	152		75	130	111	
+ 6. Damaged property	162	435	598	a	329	215	316		98	182	172		79	159	95		79	110	96	
** 7. Hard drug use	5.16	5.24	5.11		5.24	5.41	5.28		5.43	5.85	5.40	ac	5.71	6.20	5.84		5.87	6.38	5.77	
8. Fraud	—	—	—		—	—	—		—	—	—		14	43	82		6	117	67	
Offense-Category Scales																				
9. Illegal services	36	124	248		51	175	441	a	65	489	641	a	94	324	833	ab	156	1143	999	
+ 10. Public disorder	494	1339	880		446	1508	583	a	1408	1313	851		1163	1709	1007		1896	1533	1123	
11. Crimes against persons	370	1386	1693	b	224	808	839	ab	241	514	590	b	147	567	406	ab	162	208	350	
12 General theft	161	402	410		122	354	432	a	70	408	217	ab	114	308	321	a	90	228	193	a
+ 13. Status Offenses	704	1031	1249		498	1774	760	a	761	1708	1558	a	728	1897	1930	ab	1215	2780	1899	
Summary Scales																				
14. School delinquency	1097	1907	2636	b	1250	1934	1450		1003	1462	1558		946	1435	953		1159	1161	915	
15. Home delinquency	114	407	469		128	130	128		73	95	115		59	115	51		42	63	43	
16. Index offenses	52	199	195	ab	42	371	486	ab	54	177	127	a	39	180	200	b	53	122	103	
17. General delinquency B	945	2982	3399	ab	948	3611	2870	ab	2030	3439	2945		1667	3794	3955	ab	2880	5019	4495	
+ 18. General delinquency A	2278	5217	6058	ab	2159	6701	3710	a	4418	6175	5402		4155	6881	6097	a	6167	7892	6655	

B. Females

Offense-Specific Scales (N)	(193)	(242)	(321)		(195)	(235)	(307)		(192)	(228)	(306)		(184)	(222)	(298)		(171)	(223)	(285)	
1. Felony assault	10	14	32	bc	6	17	23	b	4	6	15	b	64	8	27	c	4	11	18	b
2. Minor assault	247	150	543		62	166	154		204	79	219		584	50	274		27	43	45	
3. Robbery	3	4	11		4	1	5		2	1	3		1	10	1		7	6	1	
4. Felony theft	14	25	52		9	27	15		4	7	13		11	7	53		19	12	20	
5. Minor theft	72	57	91		35	34	60		41	40	82		226	29	85		108	165	79	
+ 6. Damaged property	63	93	93		216	125	49		58	71	48		46	36	63		31	17	38	
** 7. Hard drug use	5.15	5.18	5.14		5.13	5.28	5.23		5.21	5.22	5.21		5.55	5.58	5.54		5.83	5.53	5.57	
8. Fraud	—	—	—		—	—	—		—	—	—		10	6	8		20	17	6	
Offense-Category Scales																				
9. Illegal services	83	21	10		191	143	28		31	19	132		25	30	105		15	35	131	
+ 10. Public disorder	336	401	287		489	737	297		404	586	451		1053	606	463		951	714	461	
11. Crimes against persons	261	167	586		73	185	184		210	86	237		648	69	302		39	59	64	
12. General theft	86	83	143		44	61	75		45	47	94		238	36	138		127	177	99	
+ 13. Status offenses	506	661	941		495	803	733		793	635	962		1801	1124	1624		1506	1537	1905	
Summary Scales																				
14. School delinquency	984	736	992		985	999	745		967	611	808		1660	860	1011		934	744	544	b
15. Home delinquency	162	93	234		55	405	43		346	129	80		180	64	67		240	59	35	
16. Index offenses	17	31	48	bc	13	44	33		8	10	22	b	68	21	68		25	21	31	
17. General delinquency B	769	643	1140		683	1112	1086		1058	846	1497		2262	1939	2688		2067	1623	2643	c
+ 18. General delinquency A	1498	1586	2395		1715	2190	1795		2203	1844	2496		4398	3455	3946		4050	3222	3890	

* = a = middle vs. working, $p \leq .05$; t = 2.14; b = middle vs. lower, $p \leq .05$; c = working vs. lower, $p \leq .05$

+ = 1977 estimates are based upon NIMH sample only.

** = Mean categorical score: Never = 1; once or twice = 2; once every 2-3 months = 3; once a month = 4; once every 2-3 weeks = 5; once a week = 7; once a day = 8; 2-3 times a day = 9.

samples. There is no evidence in this analysis that the general conclusions concerning class differences in the prevalence and incidence of delinquency can be explained by racial differences or by an interaction of race and class effects.

ADJUSTING FOR APPROPRIATE AND TRIVIAL EVENTS

During the 1980 and 1981 surveys (1979 and 1980 estimates), a series of follow-up questions were asked about the most recent offense of each type reported (for example, what was stolen, how much it was worth, how did you attack the person, how badly was the person hurt, did you use a weapon, what was the victim's relationship to you?). An analysis of these responses resulted in a classification of reported events as inappropriate for the offense category involved, as appropriate but trivial, or as appropriate and significant (that is, nontrivial). A reported offense was classified as inappropriate if it did not logically fall into the offense category used. For example, "taking my father's car without permission" would be considered inappropriate as an auto theft event; it would be appropriate as a joyriding event. A reported offense was considered trivial if it was judged to be logically appropriate but so minor that no official action would have resulted from such behavior. Reported events like "stealing my sister's hair ribbon," "slugging my brother on the arm during an argument," and "breaking a friend's pencil" are examples of trivial cases for theft, assault, and property destruction offense categories.

Our concern is that there might be a relationship between social class and a tendency to report inappropriate and/or trivial events. If such a relationship exists, it would indicate that self-reported offense items do not provide a standard stimulus for respondents. In this case, what is included or not included as a delinquent offense in any count of offenses might vary by class and thus render class comparisons inappropriate.

To check on this possibility, prevalence and incidence estimates for 1979 were adjusted so as to include only significant events.[10] Adjusted and unadjusted rates for males and females on each of the delinquency scales for 1979 are presented in Table 3. It is clear that the correction for trivial and inappropriate reports of offenses has an effect on the magnitude of both prevalence and incidence estimates, although its effect is more dramatic on the latter. This adjustment is typically small for the more serious offenses but substantial for minor offenses. For example, adjusted incidence rates for minor assault are approximately one-fifth the unadjusted rates. Nearly 80% of reported simple assaults involve trivial or inappropriate events. In contrast, the adjustment for triviality has little effect on the incidence rates for felony theft.

While this adjustment has a substantial effect on the magnitude of nonserious prevalence and incidence rates, there is no evidence that there is a differential effect by class. There are a few differences in the significance of particular class differentials, but the direction and magnitude of these differences are essentially unchanged by the adjustment. These data suggest that self-reports of serious offenses may have greater validity than self-reports of nonserious offenses (Huizinga and Elliott, 1982).

DISCUSSION

A number of general observations about class differences in delinquent behavior may be made. First, class differences in delinquent acts are widespread, stronger, and more persistent over time for males than females. The only significant and persistent class differences (prevalence and/or incidence) found for females involved felony assault and public disorder offenses. Among males, there are consistent and stronger class differences in the prevalence and incidence of all serious offenses and in the incidence of nonserious and total offenses.

Second, there is a pervasive pattern to the class differences observed. When significant class differences are found, they almost always involve lower prevalence and incidence rates for middle-class youth as compared to working- and/or lower-class youth. This pattern is more consistent for males than females and when examining incidence as compared to prevalence rates. There are a few specific offenses for which middle-class youth have higher prevalence rates (for example, lied about age, cheating on school tests, skipping classes, stealing from family, bought liquor for a minor, public drunkenness, disorderly conduct, and evading payment). However, there are no offenses for which middle-class youth (males or females) report a significantly higher incidence than working- and/or lower-class youth. While it appears that a higher proportion of middle-class youth report involvement in a few specific offenses each year, there is no evidence that their rate of offending is higher than that of working- and/or lower-class youth on *any* offense for any year. On the other hand, middle-class males report substantially lower prevalence and incidence rates on most serious offenses and scales, lower incidence rates on a number of nonserious offenses and scales, and lower incidence rates on global scales.

Third, the evidence for class differences in delinquency is stronger when using an incidence as compared to a prevalence measure. While there are significant class differences in prevalence rates for both sexes on felony assault and for males on felony theft, there are few significant differences in prevalence on other scales. Further, statistically significant prevalence ratios (lower to middle) are typically 2 or less. In comparison, there are more significant incidence differences on the offense scales, and the magnitude of the class ratios for these scales is never less

(Text continued on p. 174.)

TABLE 4

Adjusted (A) and Unadjusted (U) Delinquency Rates by Class and Sex: 1979

Males

Scale (N)		*Prevalence* (Percentage)				*Incidence* (Rate per 100 Youth)			
		Middle (176)	Working (233)	Lower (348)	Sig*	Middle (176)	Working (233)	Lower (348)	Sig**
Felony Assault	A	6.3	12.0	11.8		16	61	67	
	U	7.4	15.9	17.8	ab	23	82	96	
Minor Assault	A	13.7	22.3	19.3	a	21	88	52	b
	U	30.0	39.1	42.2	b	118	440	280	b
Robbery	A	1.1	4.7	4.6	b	3	23	15	
	U	1.1	5.6	5.2	ab	6	45	28	
Felony Theft	A	7.4	15.9	15.8	ab	15	93	153	ab
	U	7.4	15.9	16.7	ab	15	99	169	ab
Minor Theft	A	19.3	21.0	18.7		91	190	139	
	U	19.9	21.9	19.0		99	209	152	
Damage Prop.	A	23.3	21.9	25.0		56	118	72	
	U	27.3	24.9	27.0		79	159	95	
Illegal Serv.	A	10.3	19.3	14.7	a	86	477	769	ab
	U	10.3	19.3	15.2	a	94	524	833	ab
Crimes/Persons	A	16.5	28.3	25.9	ab	40	171	134	ab
	U	31.3	45.1	47.8	ab	147	567	406	ab
General Theft	A	22.7	25.8	25.3		106	283	292	a
	U	23.3	26.6	26.2		114	308	321	a
Index Offenses	A	10.2	18.0	19.0	b	28	131	145	
	U	11.4	22.3	24.5	ab	39	180	200	b
General Del.-B	A	62.3	70.3	71.4		1545	3322	3584	ab
	U	66.9	76.3	79.3	b	1667	3794	3955	ab

TABLE 4 (Continued)

Females

Scale (N)		*Prevalence* (Percentage)				*Incidence* (Rate per 100 Youth)			
		Middle (184)	Working (222)	Lower (298)	Sig*	Middle (184)	Working (222)	Lower (298)	Sig**
Felony Assault	A	3.3	4.1	5.4		49	5	17	
	U	4.4	5.9	7.4		64	8	27	c
Minor Assault	A	3.3	3.6	7.7		124	6	55	
	U	12.5	17.1	20.8	b	584	50	274	
Robbery	A	0.5	0.5	0.7		1	5	1	
	U	0.5	0.9	0.7		1	10	1	
Felony Theft	A	2.2	2.7	3.7		11	6	49	
	U	2.7	2.7	3.7		11	7	53	
Minor Theft	A	7.1	7.2	9.4		203	27	78	
	U	7.1	7.2	9.4		226	29	85	
Damage Prop.	A	6.5	6.3	7.4		34	24	47	
	U	7.6	9.5	8.4		46	36	63	
Illegal Serv.	A	4.4	4.1	5.4		22	29	95	
	U	5.4	4.1	5.7		25	30	105	
Crimes/Persons	A	4.4	5.9	10.1	b	174	16	73	
	U	13.6	18.6	22.8	b	648	69	302	
General Theft	A	8.2	9.9	10.4		214	33	126	
	U	8.7	9.9	10.4		238	36	138	
Index Offenses	A	3.8	4.5	5.4		53	11	55	
	U	4.9	6.3	7.4		68	21	68	
General Del.-B	A	52.5	50.7	50.3		1758	1877	2431	
	U	53.6	55.7	58.1		2262	1939	2688	

* a = middle versus working $p \leq .05$;
t = 2.32
b = middle versus lower $p \leq .05$
c = working versus lower, $p \leq .05$

** a = middle versus working $p \leq .05$;
t = 2.14
b = middle versus lower $p \leq .05$
c = working versus lower $p \leq .05$

than 2 and often exceeds 4. With regard to the global measures of delinquency, there is no evidence for a class differential in prevalence. There is evidence of class differences in the incidence of delinquent behavior on these global scales, however, with the lower- to middle-class ratios in the 2 to 3 range.

Given these findings, it appears that a number of the criticisms of earlier self-reported delinquency measures are justified. The selection of items to include in a delinquency scale is clearly a critical issue, one that has direct implications for the observed class distribution of delinquency. The items frequently employed in earlier SRD measures were not only trivial offenses, they were often heavily weighted with those few offenses for which middle-class youth tend to report higher prevalence rates (for example, skipping classes, cheating on tests, lying about one's age, buying liquor for a minor, joyriding, evading payment, drunkenness, and disorderly conduct). These offenses are clearly not a representative set, not even of nonserious offenses.

The range of offense magnitudes also presents serious problems for scale construction and interpretation. Even in a summary scale with a representative set of offenses, significant class differences on serious offenses are likely to go unnoticed. Simple assault on students has a prevalence rate of 48%, which is 48 times the rate for auto theft, 24 times that of theft (GT $50) and sexual assault, 10 times that for robbery, and 8 times that for aggravated assault (1976). Greater discrepancies occur when an incidence measure is used. While serious offenses and offenders are relatively rare in the adolescent population, conclusions concerning class differences on serious offenses still require special attention to differential magnitudes. Even among serious offenses, the problem of offense representativeness remains. While there are significant class differences on many serious offenses, particularly when considering incidence rates, there are some serious offenses for which we found no evidence of class differences on either prevalence or incidence measures.

The fact that most prior self-report findings on the relationship between class and delinquency have relied on prevalence measures involving an unrepresentative set of offenses in summary scales could easily account for their failure to observe significant class differences in delinquency. The NYS data also revealed no significant class differences in prevalence on nonserious or global measures of delinquency. Had earlier studies used incidence measures (that is, response sets that permitted the calculation of incidence estimates) or developed a serious offense prevalence scale with a representative set of serious offenses, they might well have found significant class differences.

NOTES

1. It must be acknowledged that there are indeed conceptual differences in these two measures of delinquency, and that their reconciliation does not logically require that they generate identical (or even similar) class distributions. While there is little evidence that class has any significant independent effect on official processing decisions within the justice system (Terry, 1967; Williams and Gold, 1972; Black and Reiss, 1970; Welford, 1975; Hood and Sparks, 1970; Cohen and Stark, 1974; Wolfgang et al., 1972), there is some limited support for the argument that there are class differences in the risk of apprehension when self-reported rates of offending are held constant (Gould, 1969, 1981; Elliott and Voss, 1974). It would thus be premature to reject the bias-in-processing argument. Likewise, Tittle et al.'s (1978) claim that there is no class-delinquency relationship in prior studies involving official data has been challenged (Clelland and Canter, 1980; Braithwaite, 1981), and a more extensive review of prior research by Braithwaite (1981) provides some evidence of significant class differences in official data. Yet Hindelang et al. (1981), in their recent Seattle survey, found only a weak class-official delinquency relationship. It would appear that this issue is also far from being resolved.

2. The recent finding by Hindelang et al. (1981), that black youth in Seattle were more likely than white youth to falsify their self-report responses, does represent a potentially serious problem for any comparisons involving black and white youth. However, there are some serious problems in the analysis and interpretation of these data in the Seattle study (see Elliott, 1982), and this finding should be replicated in other studies before generalizing it to all black youth.

3. We have discussed each of these problems in more detail in Elliott and Ageton (1980).

4. Note that prevalence estimates for scales *cannot* be obtained by adding the separate prevalence estimates for individual offense items in the scale. A new calculation is required so that an individual reporting offenses on more than one of the offense items in the scale is included only once in the numerator of the proportion.

5. Because the NYS uses a stratified cluster sample, the calculation of variance estimates by standard (SRS) formulas is inappropriate. A measure of the relationship between the standard formula variances (S^2) and the estimated variance based on the stratified cluster design (V^2) is the design effect (DEFF), $DEFF = V^2 / S^2$. For the NYS, the DEFF for most item estimates is between 1.0 and 1.5, indicating that the standard formula variance estimates are somewhat smaller than the accurate estimates. As a result, the computed t values used in tests of hypotheses are somewhat larger than they should be. Similar effects hold for scales.

6. In adjusting the critical values, an overall design effect of 1.4 for estimates of proportions and 1.2 for estimates of means was used. An examination of the design effects associated with offense item prevalence (proportion) estimates for the total population over the first three years indicates that over 80% of these values were below 1.4. The use of 1.4 as a representative design effect for this adjustment thus results in a conservative test. Likewise, a conservative representative design effect for estimates for means is 1.2. Given the choice of these representative design effects, the appropriate critical t-values become:

Prevalence: two-tailed $^{t}.05 = (1.4)^{1/2}(1.960) = 2.32$
Incidence: two-tailed $^{t}.05 = (1.4)^{1/2}(1.960) = 2.14$

It should be noted that the above values are not necessarily correct for any one test *for a given variable, since that variable has its own unique design effect.* Rather, the use of these values provides a general rule that is usually correct and can be applied in all cases.

7. Whenever the standard deviation was zero, no t-test was calculated.

8. This was a source of some concern, since these extreme scores, if exaggerations or falsifications, should be "corrected" or modified so as not to affect unfairly the estimates of mean frequencies. In a special review of respondents with extreme scores, all subjects reporting frequencies of 24 or greater to any SRD item were identified. Two kinds of checks were made on these respondents. First, high-score offense items were examined to determine if the response seemed reasonable, unlikely, or impossible. For example, throwing objects (snowballs) 100 times a year is not an unreasonable response, while armed robbery 100 times a year, while not impossible, appears unlikely. Second, interviewer comments relative to specific items or to the general SRD item set were examined for impressions about the validity of these responses.

Several conclusions seem warranted from this review. First, the majority of interviewer comments associated with extreme scores provided positive justification for these scores, rather than suggestions or impressions about deliberate falsification or exaggeration. Second, virtually none of the responses was logically impossible. Third, many of the highest-frequency responses were reasonably justified by interviewer comments (for example, a report of 400 thefts under $5 with an interviewer comment that the respondent indicated he worked at a grocery store and stole oranges to eat on a daily basis). Finally, there was no general rule for altering extreme scores that did not appear arbitrary and likely to produce errors of underestimation. As a result, no correction was applied to individual frequency estimates.

9. The distributional properties of the SRD scales precluded the use of a two-factor analysis of variance to examine the possibility of a class-by-race interaction.

10. Adjustment of the SRD measures to reflect only significant events was accomplished by examining the follow-up responses to individual items. If a respondent indicated only one involvement and the follow-up indicated it was a trivial event or inappropriate response, the score was set to 0. For a respondent with $n < 1$ reported behaviors on a particular item, the item score was set to $n \times p$, where p is the proportion of significant responses among all youth who reported more than one such behavior. Although this latter adjustment is rather rough, it provides a reasonable approximation for summative indices. Adjusted scale scores were obtained by summing the adjusted scores of the items included in the scales.

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APPENDIX G

UNIFORM CRIME REPORTS ARREST RATES BY AGE, SEX, AND RACE

(FBI UCR ADVANCE DATA PROVIDED BY SHARON PROFITER)

Stolen Property - Buying, Receiving, Possessing

Year	Age and Sex					
	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	14.8	27.1	2.0	15.3	28.9	2.7
1966	16.7	30.6	2.2	16.3	31.4	2.6
1967	20.5	38.0	2.5	21.3	41.2	3.3
1968	27.6	50.9	3.4	28.2	54.1	4.7
1969	31.2	56.7	4.7	35.9	68.7	6.3
1970	38.0	69.1	5.6	45.9	86.8	8.9
1971	45.3	82.4	6.8	54.3	102.6	10.6
1972	42.4	76.9	6.5	22.3	89.7	14.3
1973	49.0	88.5	8.0	45.6	85.3	9.6
1974	63.1	113.3	10.9	56.5	105.2	12.2
1975	64.4	115.5	11.3	59.6	110.6	13.3
1976	60.4	108.5	10.3	56.4	104.9	12.3
1977	62.0	110.9	11.0	53.5	99.3	11.9
1978	64.4	114.8	11.9	53.2	98.4	12.2
1979	64.6	115.3	11.6	51.6	96.0	11.2
1980	65.2	116.3	11.8	58.6	109.4	12.4
1981	59.7	106.4	10.9	61.4	113.9	13.6
1982	55.8	99.1	10.6	63.1	116.2	14.8
1983	49.5	87.7	9.5	58.4	107.7	13.4
1984	47.1	83.1	9.4	55.9	102.9	13.0
1985	51.9	91.8	10.0	54.7	100.3	13.2
1986	55.6	98.6	10.4	58.1	106.9	13.5
1987	56.5	100.1	10.7	59.7	109.3	14.2
1988	63.5	112.0	12.5	66.4	121.4	16.0

Weapons - Carrying, Possessing, etc.

Year	Age and Sex					
	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	24.3	46.3	1.6	52.8	102.0	7.6
1966	24.5	46.4	1.8	56.1	108.5	8.1
1967	27.0	51.1	2.1	67.1	130.8	9.3
1968	31.7	59.8	2.6	78.6	154.0	10.3
1969	32.6	61.1	3.1	84.9	166.4	11.2
1970	34.5	65.0	2.9	91.4	178.6	12.5
1971	35.4	66.0	3.5	98.2	191.8	14.0
1972	35.8	66.7	3.7	97.5	189.0	14.4
1973	40.1	74.6	4.3	101.7	195.4	16.5
1974	45.6	84.4	5.2	111.0	213.1	18.2
1975	39.6	72.9	4.8	90.2	174.0	13.9
1976	40.7	74.9	5.1	91.0	174.7	14.9
1977	39.8	73.0	5.2	88.2	168.0	14.1
1978	40.9	75.4	4.9	135.8	172.2	13.7
1979	44.9	82.7	5.4	90.7	176.2	13.1
1980	44.6	82.4	5.1	92.1	179.2	13.0
1981	45.9	84.6	5.4	96.3	187.0	13.8
1982	44.8	81.9	6.1	98.4	199.8	15.7
1983	41.9	76.8	5.5	93.9	181.1	14.4
1984	44.5	81.5	5.8	90.6	233.7	13.4
1985	49.7	90.4	6.9	90.2	174.2	13.5
1986	50.3	92.0	6.6	95.3	184.2	13.9
1987	48.6	88.1	7.1	93.6	180.7	13.9
1988	55.0	100.1	7.6	97.0	186.8	14.7

Sex Offenses

	Age and Sex					
	Under 18			18 and over		
Year	Total	Male	Female	Total	Male	Female
1965	31.2	44.5	16.9	54.6	101.5	11.4
1966	29.0	41.9	15.6	49.6	93.5	9.4
1967	27.0	39.7	13.9	45.9	87.7	7.9
1968	24.1	36.8	10.9	41.4	79.4	6.9
1969	23.3	35.6	10.6	44.6	84.1	8.9
1970	21.2	32.6	9.3	41.5	78.2	8.2
1971	20.9	32.9	8.5	40.8	77.4	7.7
1972	20.9	34.2	7.0	38.7	75.0	5.7
1973	20.5	34.7	5.8	38.5	75.5	4.8
1974	23.9	40.8	6.2	37.4	73.5	4.6
1975	20.6	36.0	4.6	34.0	67.2	3.9
1976	21.1	37.0	4.6	36.5	70.3	5.7
1977	20.2	35.7	4.1	38.8	74.1	6.7
1978	20.0	35.6	3.7	37.4	72.7	5.4
1979	20.6	37.4	3.1	37.0	71.5	5.6
1980	20.6	37.4	3.0	36.8	71.4	5.4
1981	20.4	37.1	3.0	38.7	74.7	6.0
1982	21.2	38.8	2.9	40.7	78.9	5.9
1983	22.5	41.2	3.0	44.2	85.7	6.5
1984	27.5	50.2	3.7	48.9	95.3	6.6
1985	28.1	50.5	4.6	48.8	94.8	6.9
1986	26.9	48.8	4.0	48.5	93.2	7.7
1987	25.6	46.7	3.5	48.2	92.7	7.5
1988	25.7	46.8	3.7	46.7	90.4	6.6

Forgery and Counterfeiting

Year	Age and Sex					
	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	6.6	10.3	2.7	34.3	58.5	12.0
1966	6.6	10.2	2.8	31.9	53.6	12.1
1967	8.1	12.9	3.2	34.0	56.3	13.7
1968	8.7	13.6	3.6	34.9	57.2	14.7
1969	8.9	13.4	4.3	37.7	61.2	16.4
1970	9.4	13.6	5.1	31.0	67.0	18.4
1971	8.4	11.9	4.7	42.3	67.4	19.5
1972	8.3	11.7	4.8	38.5	61.1	17.9
1973	9.4	13.5	5.3	36.4	56.2	18.5
1974	13.0	18.0	7.8	40.2	60.9	21.3
1975	14.0	19.9	8.2	44.2	66.3	24.2
1976	12.1	16.3	7.7	40.3	59.6	22.8
1977	15.0	21.0	8.7	43.8	64.7	24.8
1978	17.0	23.7	9.9	44.8	66.1	25.5
1979	17.5	24.3	10.5	43.3	64.1	25.9
1980	16.8	23.2	10.1	44.5	64.2	26.6
1981	15.1	20.6	9.3	48.8	69.3	30.1
1982	15.2	20.3	9.9	52.9	74.7	33.0
1983	12.6	16.5	8.4	46.1	64.3	29.5
1984	13.5	18.2	8.6	45.6	63.4	29.3
1985	14.4	19.3	9.3	44.7	62.3	28.7
1986	13.7	18.0	9.2	47.1	65.0	30.7
1987	13.4	17.5	9.2	48.0	65.8	31.7
1988	12.5	16.5	8.3	48.1	66.3	31.4

Fraud

Year	Age and Sex					
	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	3.9	6.5	1.3	62.1	103.0	24.4
1966	4.0	6.4	1.5	59.7	97.7	24.9
1967	5.0	8.1	1.9	62.6	100.7	28.0
1968	5.3	8.4	2.1	61.6	98.3	28.4
1969	6.4	10.1	2.5	67.6	104.5	34.2
1970	6.3	9.4	3.1	78.9	120.7	41.0
1971	7.5	11.4	3.4	93.4	139.7	51.4
1972	7.3	11.1	3.3	87.9	129.7	50.0
1973	9.9	15.8	3.8	82.3	118.8	49.2
1974	11.4	17.5	5.2	106.0	146.6	69.1
1975	9.2	13.3	5.0	125.6	173.2	82.3
1976	10.7	16.0	5.1	126.8	133.6	90.3
1977	44.5	69.3	18.7	133.4	177.0	93.5
1978	33.9	53.3	13.6	165.1	214.3	120.3
1979	15.8	22.6	8.6	170.2	211.7	132.6
1980	14.1	19.8	8.1	186.1	226.6	149.2
1981	26.9	40.0	13.2	179.9	213.7	144.9
1982	36.8	56.4	16.3	180.8	221.1	144.2
1983	38.9	59.0	17.8	163.9	200.2	130.9
1984	33.7	50.8	15.8	163.5	195.9	134.1
1985	33.0	49.9	15.3	178.1	209.6	149.3
1986	33.5	49.4	16.9	179.3	208.5	152.6
1987	34.8	50.3	18.6	175.5	202.8	150.5
1988	24.4	35.6	12.7	175.7	198.6	154.8

Note: In 1977, 1978, and 1981 through 1988, figures include New York City's public transportation fare card cheats.

Embezzlement

Year	Age and Sex					
	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	0.6	1.0	0.2	9.2	15.8	3.0
1966	0.4	0.7	0.2	7.4	12.5	2.7
1967	0.5	0.9	0.1	6.5	11.0	2.4
1968	0.5	0.9	0.2	6.4	10.9	2.4
1969	0.5	0.7	0.3	6.8	11.4	2.6
1970	0.7	1.0	0.4	8.2	13.1	3.8
1971	0.9	1.2	0.5	7.0	11.1	3.4
1972	0.7	1.1	0.3	6.0	9.2	3.0
1973	0.9	1.4	0.4	5.0	8.0	2.3
1974	1.1	1.7	0.5	6.3	9.9	3.0
1975	1.3	2.1	0.5	8.1	11.4	5.1
1976	1.2	2.0	0.4	6.5	9.3	4.0
1977	1.5	2.3	0.7	4.4	7.1	2.0
1978	1.5	2.2	0.8	4.8	7.5	2.3
1979	1.7	2.6	0.8	4.9	7.6	2.4
1980	1.7	2.5	0.9	5.1	7.6	2.8
1981	1.6	2.3	0.9	5.2	7.7	2.9
1982	1.1	1.6	0.6	5.0	7.2	2.9
1983	0.9	1.2	0.5	4.9	6.9	3.0
1984	1.0	1.3	0.7	5.0	6.8	3.4
1985	1.3	1.7	0.8	6.0	8.0	4.1
1986	1.3	1.5	1.1	6.6	8.8	4.5
1987	1.7	2.1	1.3	6.5	8.4	4.8
1988	1.9	2.2	1.6	7.6	9.9	5.4

Gambling

Year	Age and Sex					
	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	5.7	10.8	0.4	138.2	265.4	21.0
1966	4.9	9.4	0.3	113.2	217.1	18.0
1967	4.4	8.4	0.3	93.2	178.4	15.7
1968	4.3	8.2	0.3	85.0	163.8	13.6
1969	3.6	6.8	0.2	85.9	166.7	12.9
1970	3.3	6.3	0.2	88.1	170.3	13.8
1971	4.2	7.9	0.4	86.0	165.7	13.6
1972	3.7	7.0	0.2	67.5	129.2	11.5
1973	4.3	7.9	0.4	58.3	111.5	9.9
1974	4.9	9.2	0.4	50.9	97.8	8.3
1975	2.5	4.7	0.3	36.8	71.1	5.5
1976	5.7	10.1	1.1	55.3	104.8	10.3
1977	4.1	7.6	0.4	38.2	73.2	6.4
1978	3.8	7.0	0.4	36.4	69.5	6.2
1979	4.0	7.5	0.3	36.3	68.7	6.8
1980	3.3	6.2	0.3	33.3	62.4	6.8
1981	2.4	4.5	0.3	26.6	50.1	5.1
1982	2.5	4.7	0.2	25.8	48.3	5.4
1983	2.0	3.7	0.2	25.4	47.3	5.4
1984	1.8	3.3	0.3	23.3	42.4	5.9
1985	1.8	3.4	0.2	20.2	36.5	5.4
1986	1.4	2.7	0.2	19.1	33.4	6.0
1987	1.6	2.9	0.2	14.7	26.4	3.9
1988	1.6	2.9	0.2	12.4	21.8	3.8

Drug Abuse Violations

Year	Under 18			18 and over		
	Total	Male	Female	Total	Male	Female
1965	11.7	20.2	2.9	50.4	90.7	13.2
1966	18.9	31.7	5.5	62.8	113.1	16.8
1967	44.6	73.5	14.6	91.5	166.5	23.4
1968	91.2	145.0	35.4	135.1	246.1	34.6
1969	122.4	189.9	52.4	199.1	361.6	52.2
1970	160.3	244.7	72.7	285.3	516.6	76.0
1971	177.1	271.3	79.2	319.4	575.1	87.6
1972	190.7	300.9	76.1	320.4	577.8	86.3
1973	263.2	423.2	96.7	355.6	648.9	88.9
1974	305.7	496.4	107.2	398.6	727.4	99.6
1975	245.0	401.0	82.7	339.9	621.9	83.6
1976	242.8	398.5	80.7	342.0	624.0	85.7
1977	237.2	388.6	79.4	334.1	608.0	85.1
1978	242.4	396.0	82.2	321.0	587.9	78.6
1979	202.3	330.9	67.9	289.3	530.7	69.9
1980	184.7	301.5	62.7	306.9	565.8	74.7
1981	173.6	285.1	56.9	332.8	610.5	80.2
1982	150.1	246.2	49.7	358.0	651.8	90.5
1983	135.4	222.0	44.9	370.2	670.2	96.8
1984	139.2	231.3	42.7	380.9	690.0	99.4
1985	153.1	255.4	45.8	423.3	766.1	110.0
1986	135.5	227.6	39.0	440.3	789.2	121.0
1987	143.9	244.3	38.6	491.6	872.6	142.6
1988	158.3	271.0	40.0	552.6	973.7	166.5

Race-Specific Arrest Rates, United States

	Forgery and Counterfeiting			Fraud*		
Year	All Races	White	Nonwhite	All Races	White	Nonwhite
1965	23.5	21.1	41.6	42.2	39.5	62.2
1966	22.4	19.9	41.4	41.5	38.2	65.3
1967	24.2	20.9	48.1	44.0	40.2	71.6
1968	25.0	20.6	56.1	43.5	38.3	80.7
1969	26.8	20.7	70.0	48.0	40.9	98.6
1970	30.0	23.6	75.8	57.5	49.9	111.2
1971	29.8	23.1	76.8	66.6	56.5	137.7
1972	27.5	21.0	72.4	63.4	52.4	139.4
1973	27.6	21.2	71.3	60.6	48.8	141.2
1974	31.7	23.9	84.3	78.0	60.7	194.3
1975	34.3	26.7	84.5	91.9	75.7	199.3
1976	31.8	24.1	82.2	93.9	73.3	228.3
1977	35.3	27.1	87.8	107.5	81.4	275.7
1978	36.7	27.8	93.1	126.8	93.1	341.2
1979	35.8	27.6	86.9	125.4	98.0	297.6
1980	36.7	28.4	87.1	140.0	111.2	315.5
1981	39.5	29.2	100.9	140.2	111.5	311.8
1982	42.8	31.7	107.5	144.2	112.5	330.7
1983	37.2	28.0	90.0	132.8	103.5	302.1
1984	37.1	28.7	84.8	129.3	102.3	283.4
1985	36.8	29.1	80.4	140.3	110.6	307.7
1986	38.4	29.8	86.2	141.7	110.4	315.2
1987	39.0	30.1	87.2	139.1	107.9	310.0
1988	38.8	29.6	88.4	137.0	106.2	303.0

*In 1977, 1978, and 1981 through 1988, fraud figures include New York City's public transportation fare card cheats.

Race-Specific Arrest Rates, United States

	Embezzlement			Stolen Property		
Year	All Races	White	Nonwhite	All Races	White	Nonwhite
1965	5.8	5.6	7.2	13.6	9.8	41.4
1966	4.7	4.6	6.1	15.1	10.9	45.9
1967	4.1	3.8	6.3	19.1	13.2	61.8
1968	4.2	3.8	6.4	25.0	17.5	79.0
1969	4.5	4.0	8.6	28.9	19.6	94.8
1970	5.6	4.8	11.8	36.0	25.4	111.2
1971	4.9	4.1	10.2	44.5	32.1	131.4
1972	4.1	3.4	9.4	42.9	30.3	129.4
1973	3.6	3.2	6.2	45.8	32.8	134.6
1974	4.5	3.8	9.0	57.2	41.6	162.8
1975	6.0	4.7	14.8	59.3	45.8	149.0
1976	4.9	3.9	11.9	55.9	42.1	145.7
1977	3.6	3.2	6.2	56.2	41.9	148.2
1978	3.8	3.3	7.4	56.2	41.2	152.0
1979	4.0	3.5	7.2	54.9	42.6	132.6
1980	4.2	3.6	7.5	60.5	47.5	139.5
1981	4.2	3.6	7.6	61.0	46.4	148.0
1982	3.9	3.4	6.8	61.1	44.7	157.4
1983	3.8	3.2	7.1	56.0	41.0	142.7
1984	4.0	3.3	7.6	53.6	38.7	138.7
1985	4.8	4.0	9.4	53.9	39.4	135.6
1986	5.2	4.3	10.2	57.4	41.1	147.9
1987	5.3	4.3	10.8	58.9	41.5	154.1
1988	6.0	4.6	13.7	65.4	44.2	179.6

Race-Specific Arrest Rates, United States

	Weapons Violations			Sex Offenses		
Year	All Races	White	Nonwhite	All Races	White	Nonwhite
1965	42.6	22.1	194.6	45.7	37.5	106.2
1966	46.0	24.2	206.0	42.3	35.5	92.6
1967	53.9	29.0	234.8	39.3	32.9	85.5
1968	62.0	34.5	259.8	35.7	30.7	71.8
1969	66.7	35.5	289.7	37.2	31.8	76.1
1970	71.9	39.6	299.8	35.9	31.4	68.2
1971	75.9	40.7	321.5	34.5	30.0	65.9
1972	75.1	39.9	318.3	33.1	28.5	64.5
1973	80.7	43.8	332.0	33.0	28.4	64.0
1974	90.7	52.7	346.5	33.2	29.7	56.8
1975	73.7	50.3	228.8	29.8	27.5	44.9
1976	75.6	47.9	256.5	31.8	28.1	55.9
1977	73.6	48.7	234.2	33.3	29.4	58.6
1978	74.5	49.8	232.0	32.3	27.9	59.9
1979	77.4	55.1	218.1	32.2	28.7	54.0
1980	78.8	56.9	212.2	32.3	29.3	50.2
1981	82.5	59.8	218.4	33.7	30.7	51.8
1982	87.7	63.3	231.0	35.4	32.2	54.3
1983	80.1	58.1	207.2	38.5	35.0	58.6
1984	78.5	57.5	198.4	43.2	39.8	62.9
1985	79.5	59.8	190.4	43.4	39.5	65.6
1986	83.4	61.5	205.1	42.9	38.8	65.9
1987	82.0	58.9	208.1	42.4	38.8	62.0
1988	86.0	59.4	230.0	41.3	37.5	61.9

Race-Specific Arrest Rates, United States

	Gambling			Drug Abuse Violations		
Year	All Races	White	Nonwhite	All Races	White	Nonwhite
1965	74.7	19.2	485.9	26.7	17.9	91.3
1966	66.8	17.8	426.6	37.6	26.8	116.9
1967	56.3	16.1	347.9	65.3	52.4	159.2
1968	50.2	16.9	290.2	109.0	95.7	204.7
1969	50.1	16.7	288.5	154.7	134.6	298.2
1970	55.3	18.7	313.9	223.3	198.9	395.7
1971	53.7	16.8	311.1	255.9	225.9	465.6
1972	46.9	14.9	267.9	275.4	245.6	481.0
1973	42.1	13.0	240.2	332.4	303.8	527.5
1974	37.5	10.1	221.8	378.3	343.1	615.1
1975	26.7	8.5	147.7	313.7	288.5	480.5
1976	40.8	18.4	186.8	313.4	274.0	571.1
1977	28.2	8.6	155.0	305.8	268.2	548.4
1978	26.8	8.4	144.0	296.4	260.1	527.4
1979	27.0	8.6	142.5	263.0	232.5	454.8
1980	24.9	8.6	124.4	273.6	237.9	491.0
1981	20.0	7.7	93.2	289.0	248.4	531.6
1982	19.6	8.1	87.4	301.6	251.4	596.3
1983	19.2	7.8	84.9	307.4	248.0	651.2
1984	17.6	8.3	71.2	316.7	253.2	679.1
1985	15.2	7.5	58.3	351.9	280.8	752.6
1986	14.3	7.9	49.9	360.3	275.4	831.7
1987	11.3	5.4	43.2	401.2	299.8	956.6
1988	9.4	5.2	31.9	449.8	315.9	1,172.4